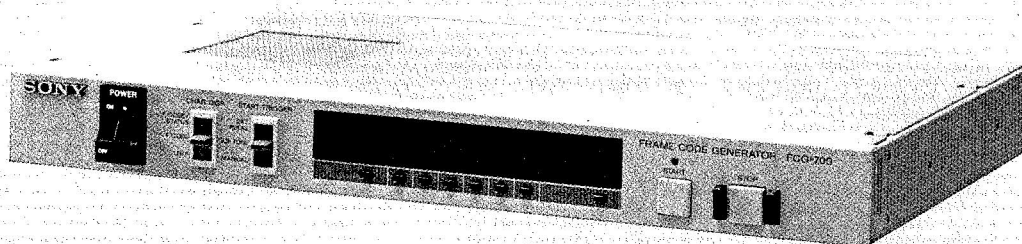


FCG-700

U/C Model
EK Model



FRAME CODE GENERATOR

SPECIFICATIONS

Power requirements:	AC 120 V, 50/60 Hz (NTSC) AC 220 — 240 V, 50/60 Hz (PAL)
Power consumption:	10 W (120 V) 12 W (220 — 240 V)
Dimensions:	Approx. 424(W) x 49(H) x 256(D) mm (16.7 x 1.9 x 10.1 inches)
Weight:	Approx. 3.3 kg (7.3 lb)
Video in:	BNC, 1.0 Vp-p (75 ohms on/off selectable)
Video out 1:	BNC, 1.0 Vp-p (at 75 ohm load)
Video out 2:	BNC, 1.0 Vp-p (at 75 ohm load)
Audio in:	XLR, +4 dBs phono, -5 dBs
Audio out:	XLR, +4 dBs phono, -5 dBs
External pulse in:	BNC, TTL level
Supplied accessories:	Rack mount brackets Operation manual AC cord

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY[®]

SERVICE MANUAL

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CHAPTER 1

GENERAL

1-1. GENERAL

The Sony FCG-700 frame code generator sequentially numbers each picture frame recorded on a tape. This number is called a "frame code". By recording pictures with frame codes, any desired point on a tape can be precisely located with an absolute address in place of the conventional relative address of CTL signals.

Generating and recording the frame codes

This unit generates 6-digit frame codes and inserts them between 17H and 18H of the vertical blankings of video signals. The frame codes are generated from 000000 to 299999, and they correspond to 2 hours 46 minutes* when timed. The code number returns to 000000 when it exceeds 299999. The video signal on which the frame codes have been inserted can be recorded on a video tape.

Reading the frame codes

To read out the frame codes recorded on a tape, an optional BKU-701 frame code reader is required. By installing the BKU-701 into TYPE IX series VTR (VO-9600/9600P, VP-9000 etc.) or TYPE VII series VTR (VP-7030 etc.), frame codes can be read out and displayed on the time counter.

- The BKU-701 must be installed by authorized service personnel. For installation, consult your Sony dealer.

Video output with character display function

This unit is equipped with a video output which feeds a video signal with the inserted frame codes as well as character data indicating the frame code value and the status of this unit. The frame code being generated and the condition of this unit can be checked on a monitor screen. A picture combined with character data can be recorded when this output is connected to a recorder.

Rack mounting

The supplied rack mount brackets permit this unit to be installed in a 19-inch standard rack.

Starting methods of frame code insertion

The frame code insertion can be started in three ways in accordance with the START TRIGGER switch setting on the front panel.

1. EXTERNAL PULSE

The unit starts the insertion when an external pulse is detected after the START button is pressed.

2. CUE TONE

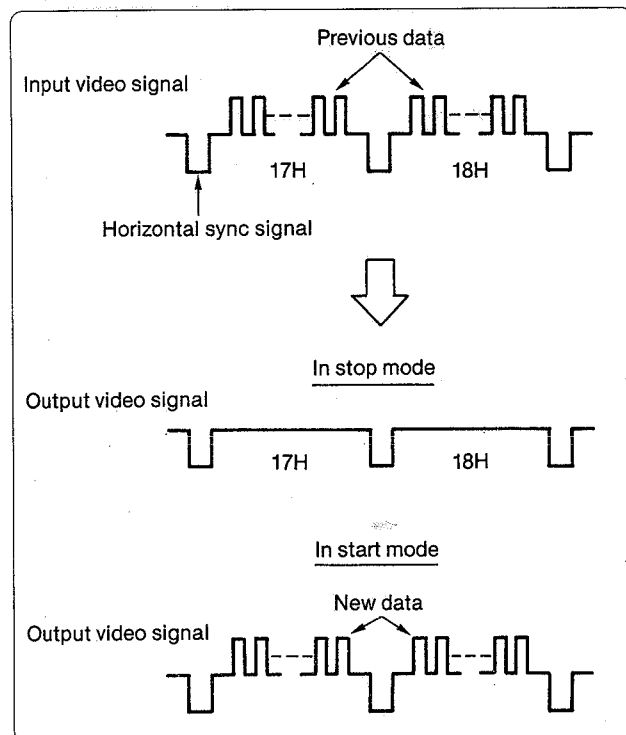
The unit starts the insertion when a 1-kHz cue tone is detected after the START button is pressed.

3. MANUAL

The unit immediately starts the insertion when the START button is pressed.

Clearing of the frame codes

If the frame codes or VITC (Vertical Interval Time Codes) have been previously inserted between 17H and 18H of the input video signal, these data will be automatically cleared (deleted) when the unit is turned on even though the unit is in the stop mode. When the unit is in the start mode, the previous data will be replaced with the new frame codes.

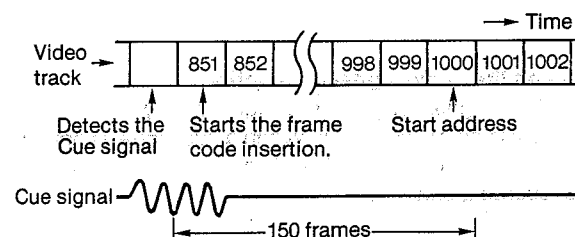


Preroll recording

To start the desired picture with the desired frame code value, a preroll time can be set in frames between 0 to 9999 when the EXTERNAL PULSE or CUE TONE is selected for the start trigger.

When detecting an external pulse or a cue tone, the unit starts the frame code insertion from the address next to that obtained by subtracting the preroll time (in frames) from the designated start address. The factory-set value of the preroll time is 150 frames (EK MODEL 125 frames).

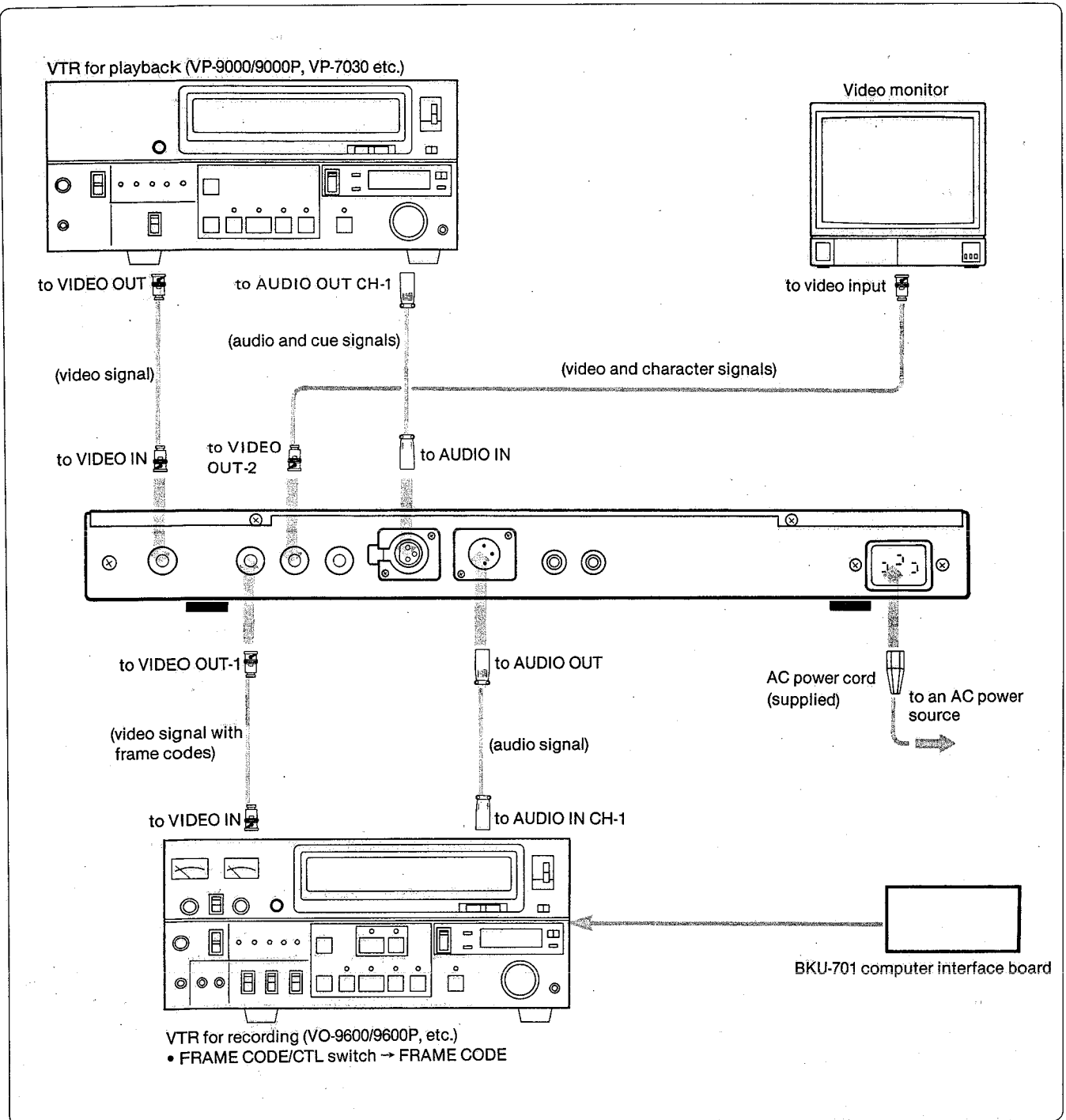
Example: When the frame code start address is 1000 and the preroll time is 150 frames



When the preroll time setting is changed, the value is maintained even after the power is turned off.

* NTSC: 2 hours 46 minutes
PAL: 3 hours 20 minutes

1-2. CONNECTIONS

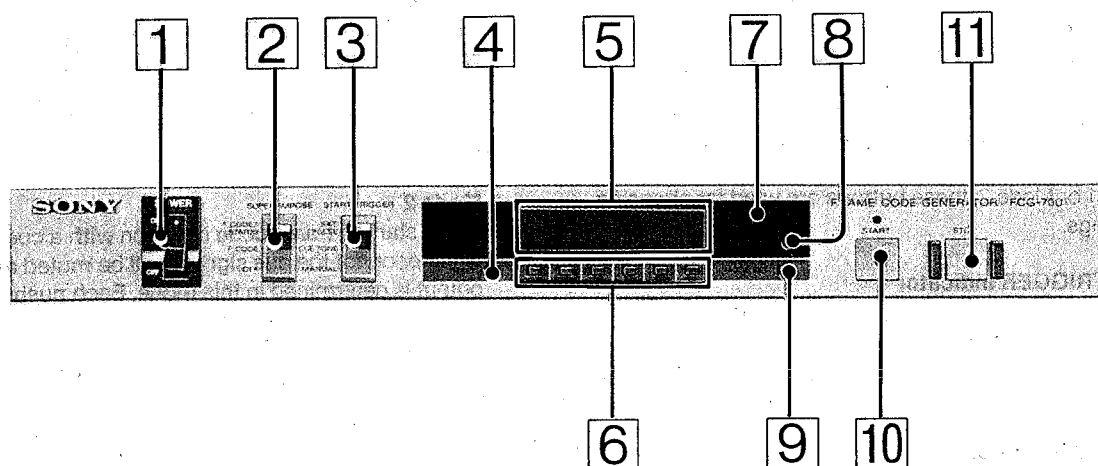


Notes on the audio signal connection

- The audio signal connection is required only when a cue signal is used as the trigger. When a cue signal is not used, connect the audio signal directly from the playback unit to the recording unit.
- When the VTR used has phono type audio input/output, connect them to the phono AUDIO IN and AUDIO OUT jacks of the FCG-700.
- On the FCG-700, use the same type connectors for inputting and outputting the audio signal. Note that the signal connected to the XLR 3-pin input is not fed to the phono output, and the signal connected to the phono input is not fed to the XLR 3-pin output.

1-3. FUNCTION OF PARTS (FRONT PANEL)

FRONT PANEL



1 POWER switch

Turns the unit on and off.

2 SUPERIMPOSE switch

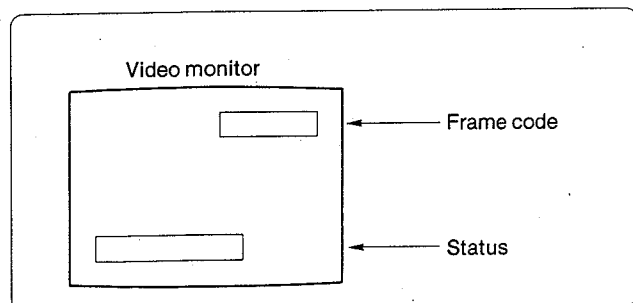
Selects character data to be superimposed on the video output signal fed to the VIDEO OUT-2 connector.

F.CODE/STATUS	To superimpose frame codes and the status data of this unit.
F.CODE	To superimpose frame codes.
OFF	To output video signal only.

3 START TRIGGER selector

Selects the trigger to start inserting frame codes.

EXT. PULSE	To start by an external pulse connected to the EXT.PULSE IN connector. (The START button must be pressed in advance.)
CUE TONE	To start by an external 1 kHz cue signal connected to the AUDIO IN connector. (The START button must be pressed in advance.)
MANUAL	To start by pressing the START button.



- Once the START button is pressed, the trigger selection cannot be changed even if this switch is set to the other positions. To change the trigger, first press the STOP button, and then set this switch to the desired position.

4 RESET button

Clears the value on the display to "000000".

5 Display

Normally shows the frame code value from 000000 to 299999. The display will return to "000000" when it exceeds the maximum value.

In Mode 1 or Mode 2 (see 9 MODE SET button), the data of the mode will be displayed.

6 Data set buttons

Normally set the initial number of frame codes to be inserted.

Each push on the buttons advances the displayed digit one by one. When the button is kept depressed, the digit will continuously advance.

In Mode 1 or Mode 2, these buttons are used for changing the settings.

7 START TRIGGER indicator

Lights up when the START button is pressed with the START TRIGGER selector set at EXT.PULSE or CUE TONE, indicating that frame code insertion will be started by an external signal.

8 NO VIDEO indicator

Lights up when no video signal is connected to the VIDEO IN connector. While this indicator is lit, frame code insertion cannot be started by pressing the START button. If the START button is pressed, the START indicator will start blinking.

E037ST

9 MODE SET button

Sets the display to "1-xxxx" (Mode 1), "2-On" or "2-OFF" (Mode 2) and the normal frame code indication by turns.

- The MODE SET button is operative only when the unit is in the stop mode (the START indicator is not lit).

Mode 1

The preroll time for a preroll recording can be set in frames in this mode. The setting range is between 0000 and 9999 and the factory-set value is 150 frames. The data will be shown on the display in a form as "1-0150" (Mode No. - Frame number for preroll). (EK MODEL 125 FRAMES)

The frame number can be changed with the data set buttons.

Mode 2

When starting frame code insertion with a cue signal, whether or not the cue signal shall be muted at the audio output is determined in this mode. Each push on the right-most data set button turns the muting on and off by turns.

ON: When the START button is pressed, the audio output is muted, and no signal is fed out until a 1-kHz cue signal is detected and then lost. When the cue signal is lost, the muting is released and the signal supplied via the audio input is output as it is. "2-On" will be shown on the display.

OFF: The cue signal is not muted as the signal supplied via the audio input is constantly fed out from the audio output. "2-OFF" will be shown on the display.

10 START button/indicator

To start inserting frame codes, press the button.

When the START TRIGGER switch is set at MANUAL, the indicator lights up and the insertion starts.

When the START TRIGGER switch is set at EXT.PULSE or CUE TONE, the indicator starts blinking to indicate that the unit is waiting for the external trigger signal.

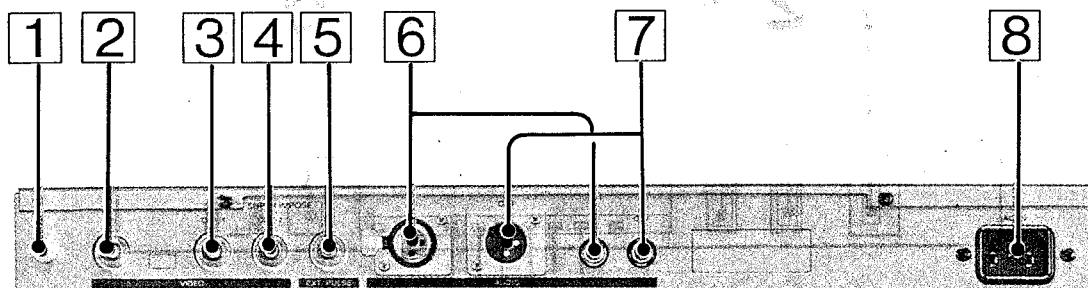
- While the START indicator is lit, the RESET button, data set buttons, MODE SET button and START TRIGGER switch are not operative.

11 STOP button

Stops inserting adding frame codes. When the button is pressed, the START indicator goes off.

1-4. FUNCTION OF PARTS (REAR PANEL)

REAR PANEL



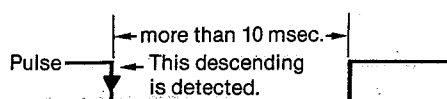
1 Ground terminal
For signals.

2 VIDEO IN connector (BNC type)
Accepts a video signal into which frame codes are to be inserted. This connector is terminated with 75 ohms.

3 VIDEO OUT-1 connector (BNC type)
Outputs a video signal from the VIDEO IN connector after frame codes have been inserted. Connect this output to the video input of a recorder.
• When the unit is turned off, the signal connected to the VIDEO IN connector is output as it is and the 75-ohm termination of the VIDEO IN connector is also turned off.

4 VIDEO OUT-2/SUPERIMPOSE connector (BNC type)
Outputs the same signal as that fed from the VIDEO OUT-1 connector after adding character data (frame code and status data) selected with the SUPERIMPOSE switch. When connected to the video input of a video monitor, the inserted frame codes and the status of this unit can be monitored on the screen. When recording those character data, connect this output to the video input connector of a recorder.

5 EXT. PULSE IN (external pulse input) connector (BNC type)
Accepts the trigger signal to start adding frame codes. Frame code insertion will begin when a pulse is detected while the START indicator is lit and the START TRIGGER switch is set at EXT.PULSE.
For the pulse, a TTL low level signal of more than 10 msec. is required.

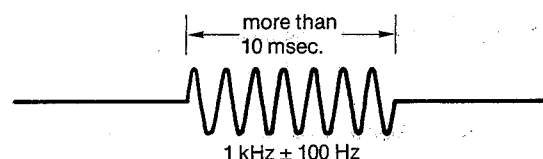


6 AUDIO IN connectors (XLR 3-pin connector and phono jack)

Accept a cue signal or an audio channel on which a cue signal has been recorded (normally, channel 1 of a VTR) to start frame code insertion with a cue signal.

A recorder with a XLR 3-pin audio output should be connected to the XLR 3-pin input, while a VTR with a phono type audio output should be connected to the phono connector.

For the cue signal, a 1 kHz $\pm$ 100 Hz signal of more than 10 msec. is required.



- The level of the cue signal must be more than +1 dBs when the XLR 3-pin input is used, while it must be less than -3 dBs when the phono type input is used.
- When not using cue signal, an audio signal need not be connected to this unit. Directly connect the audio signal from the playback unit to the recording unit.

7 AUDIO OUT connectors (XLR 3-pin connector and phono jack)

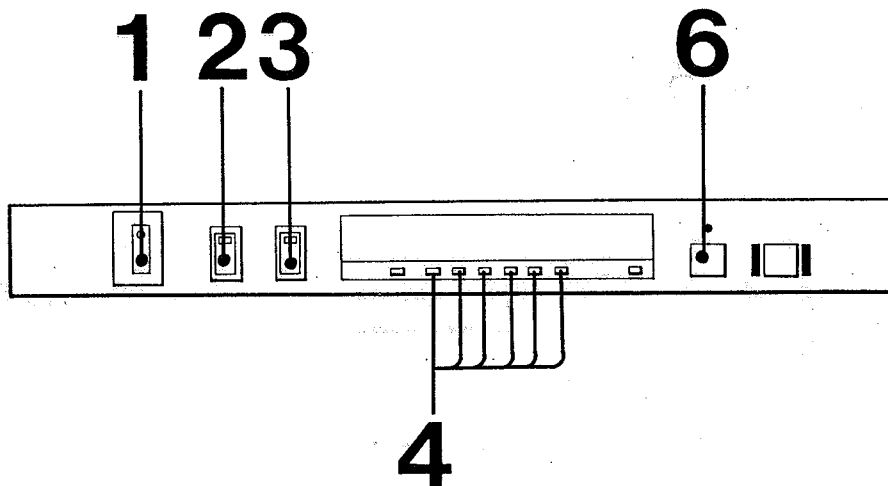
Output an audio signal when an audio signal is supplied to the respective AUDIO IN connectors. The signal connected to the XLR 3-pin type input is fed to the XLR type output and that connected to the phono type input is fed to the phono type output.
Connect the output to the audio channel 1 input of a recorder.

- When the START TRIGGER switch is set to CUE TONE and the setting of Mode 2 is ON, the output signal will be muted with push on the START button until a cue signal is detected within the unit.

8 AC IN connector

Accepts an AC power. Use the supplied AC power cord for the connection.

1-5. OPERATION



1 Press the ON side of the POWER switch to turn on the unit.

2 Select the character data to be displayed on the monitor by setting the SUPERIMPOSE switch to:

OFF	for no character data.
F.CODE	for displaying frame codes.
F.CODE/STATUS	for displaying frame codes and status data.

3 Set the START TRIGGER selector to:

MANUAL	to start the frame code insertion by pressing the START button.
CUE TONE	to start the frame code insertion by an external cue signal.
EXT.PULSE	to start the frame code insertion by an external pulse.

4 Set the initial frame code number with the data set buttons.

5 Play a tape on the VTR.

6 Press the START button.

When the START TRIGGER switch has been set to MANUAL in step 3, the START indicator lights up and the frame code insertion begins.

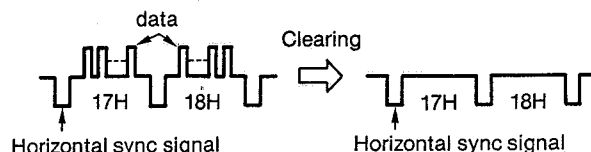
When the START TRIGGER selector has been set to CUE TONE or EXT.PULSE in step 3, the START indicator starts blinking. Supply a cue signal or a pulse to start the insertion.

To stop the insertion
Press the STOP button.

If the NO VIDEO indicator lights up
No video signal is available at the VIDEO IN connector.
Check the connection.

Notes on the frame code insertion

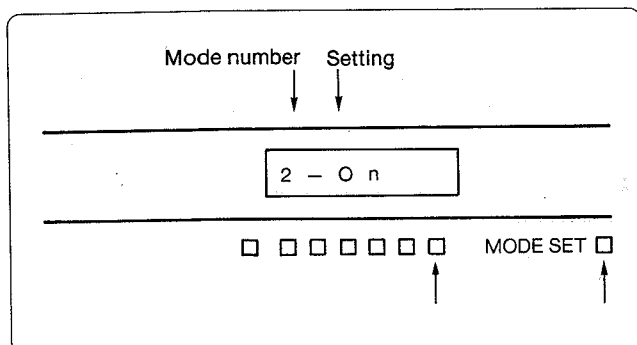
When the unit is turned on, any data of 17H and 18H of the vertical blankings of the input video signal will be automatically cleared (deleted) even when the unit is in the stop mode. Therefore, if recorded at 17H and 18H, VITC (Vertical Interval Time Code) data cannot be used after the frame code insertion.



CUE SIGNAL MUTING

When a cue signal recorded on the audio channel of a tape is used as a trigger, it can be muted at the audio output,

- 1 Press the MODE SET button twice to select Mode 2.



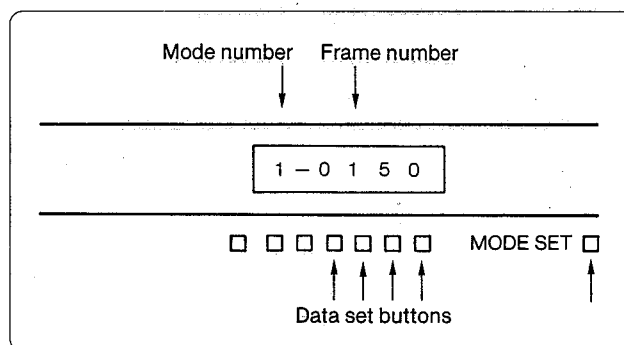
- 2 Each push on the right-most data set button turns the muting on and off by turns.
On: The cue signal is muted.
OFF: The cue signal is not muted.

- 3 Press the MODE SET button again to release Mode 2.

PREROLL TIME SETTING

By setting a preroll time by picture frame, you can start inserting frame codes a predetermined time before the desired point. Perform the setting while the unit is in the stop mode (the START indicator is not lit).

- 1 Press the MODE SET button.



- 2 Press the data set buttons to set the desired preroll time in frames.

- 3 Press the MODE SET button twice to release the Mode set condition.

EXAMPLE OF FRAME CODE INSERTION

Initial frame code: 001000

Preroll: 90 frames

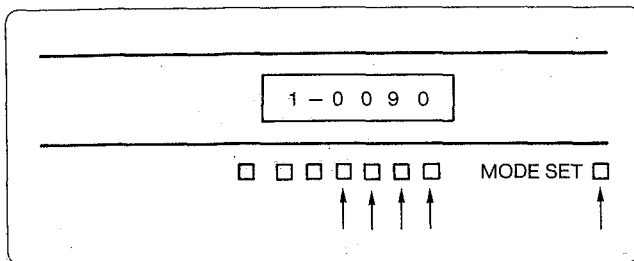
Trigger for starting: Cue signal recorded on an audio channel

Cue signal to the audio output: Muted

1 Record a cue signal on audio channel 1 of the video tape in which frame codes are to be inserted.

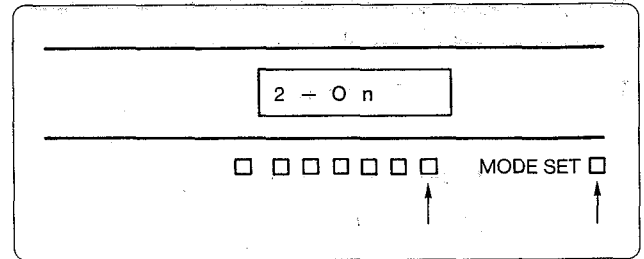
2 Set the frame number for preroll in Mode 1.

- 1) Press the MODE SET button.
- 2) Press the data set buttons to set the number.



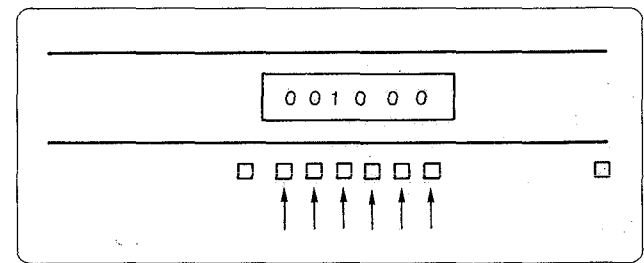
3 Mute the cue signal to the audio output in Mode 2.

- 1) Press the MODE SET button.
- 2) Press one of the data set buttons so that "2-On" is shown on the display.



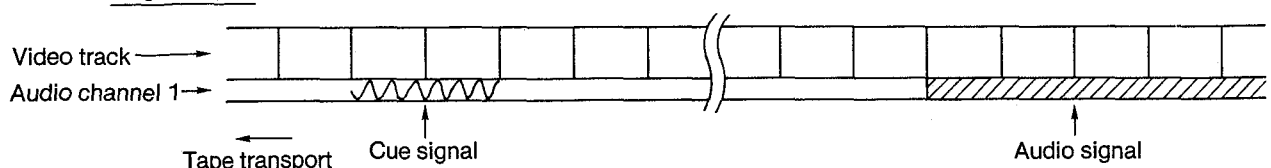
4 Press the MODE SET button to release the Mode set condition.

5 Set the initial frame code to be inserted.



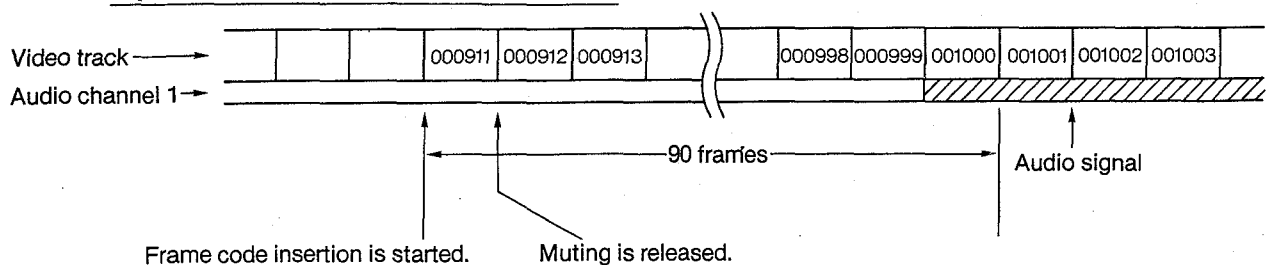
Then, play the tape prepared in Step 1 and record it on another tape while inserting frame codes.

Original tape



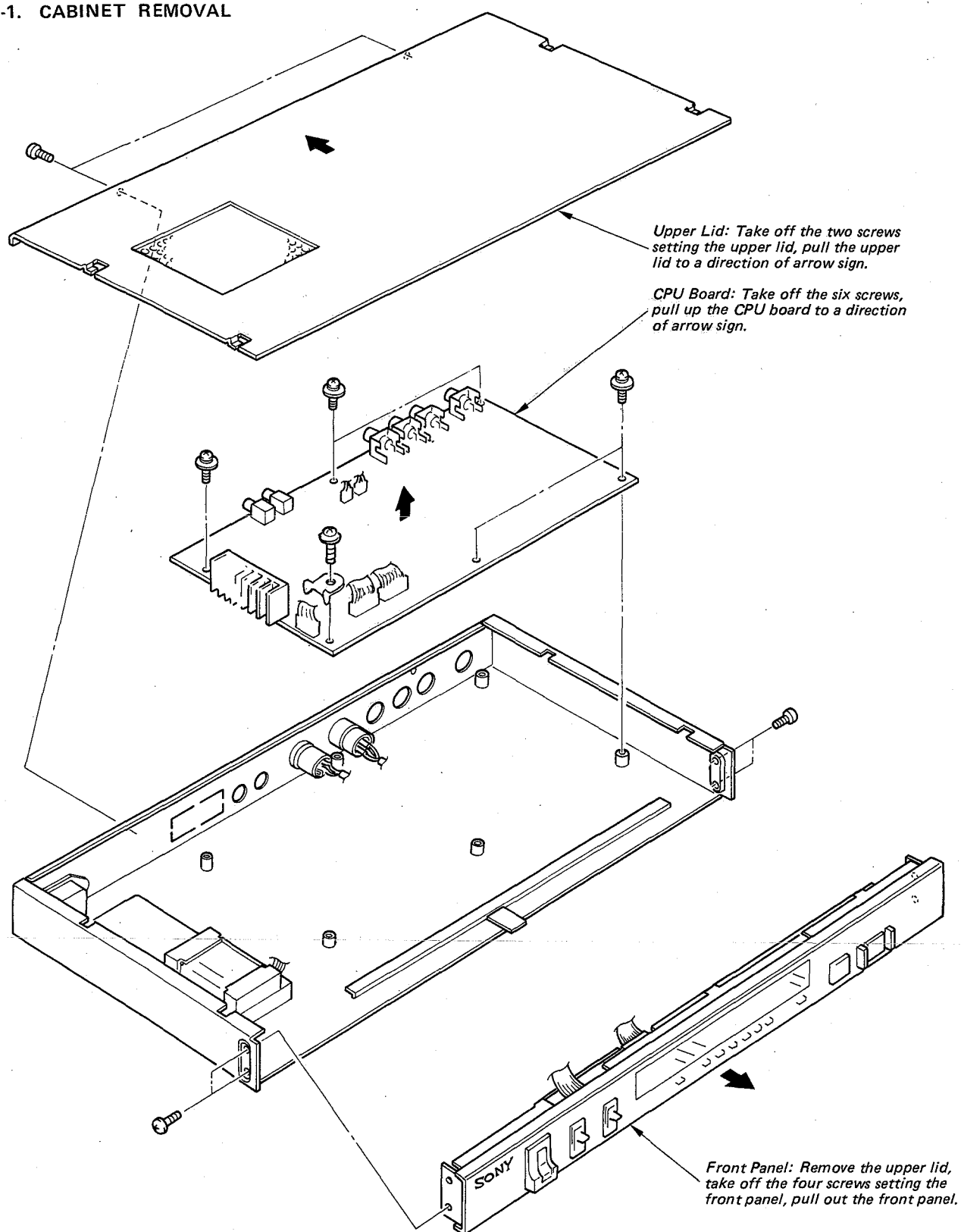
Play the tape and record the video signal in which frame codes have been inserted.

Tape in which frame codes have been inserted



CHAPTER 2 SERVICE INFORMATION

2-1. CABINET REMOVAL

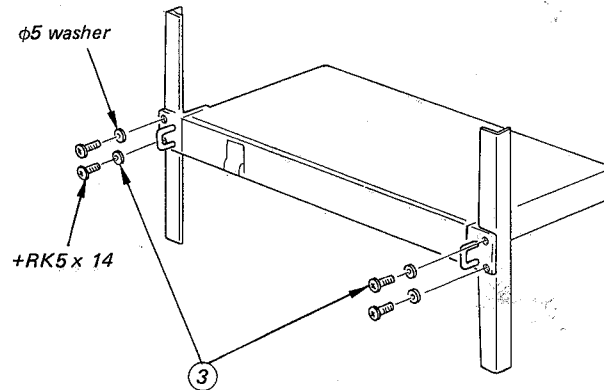
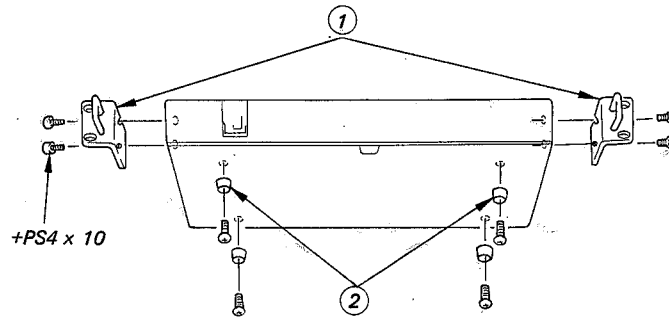


FCG-700

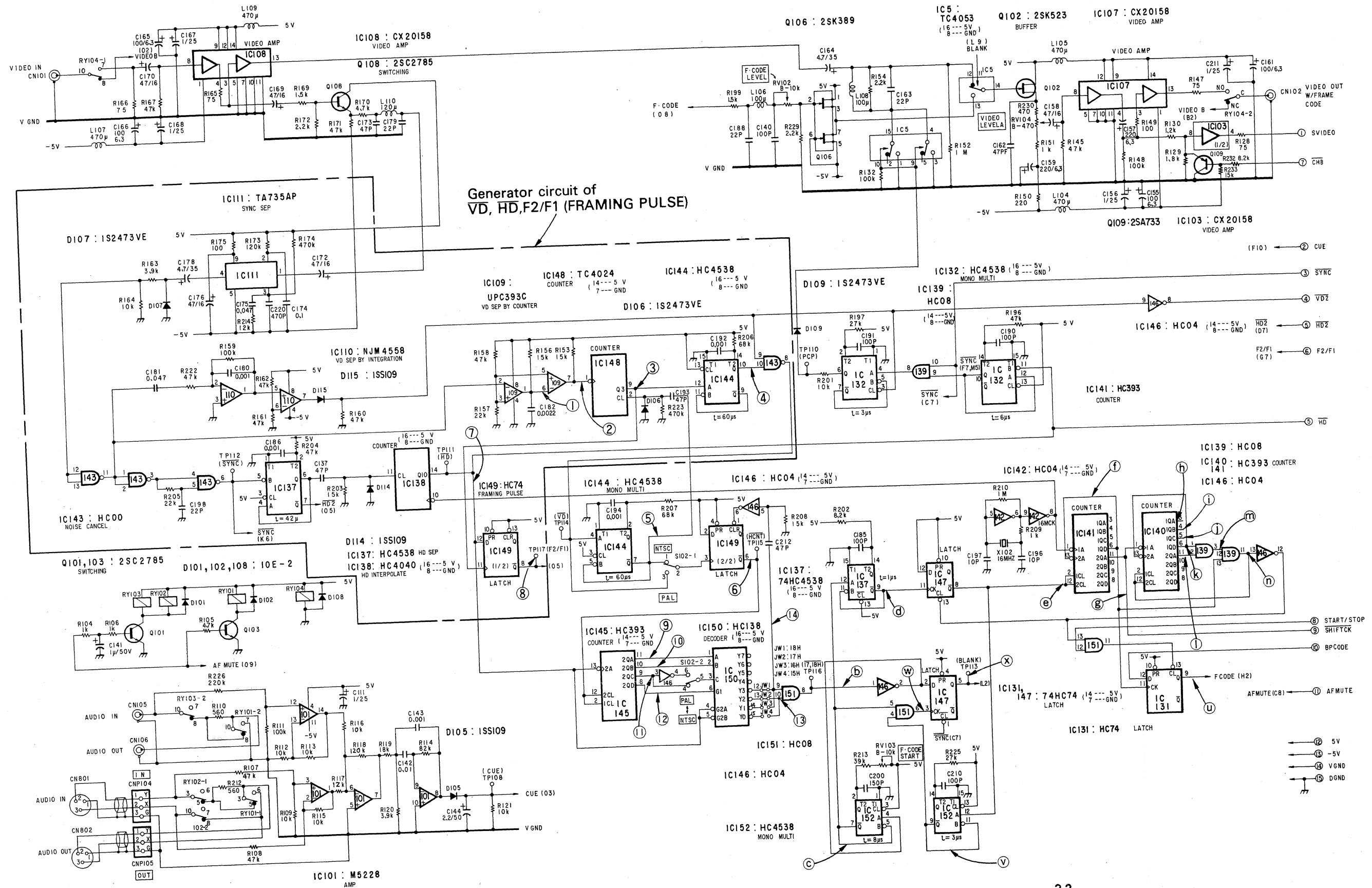
2-2. RACK MOUNTING

The FCG-700 is designed to be mounted in a 19-inch EIA standard rack.

- ① Secure the brackets to FCG-700 with the four screws supplied.
- ② Remove the four feet from the bottom.
- ③ Secure the unit on the rack with the four screws and washers supplied.

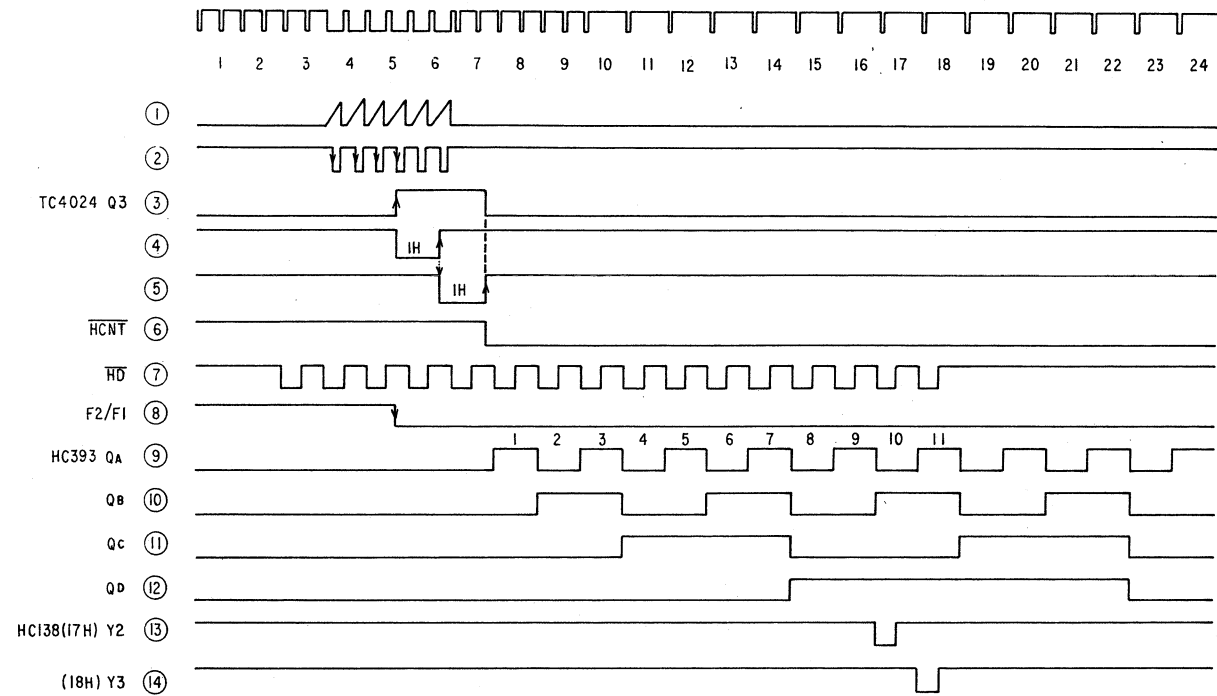


CHAPTER 3
TIMING CHART



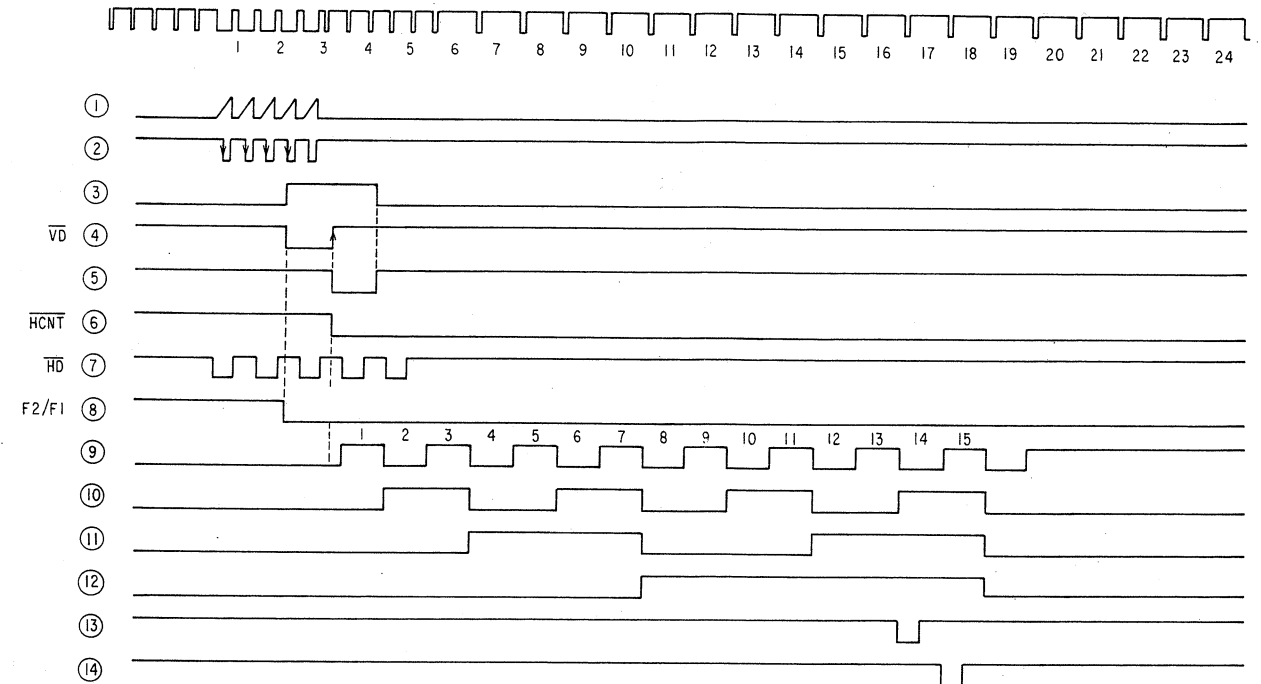
NTSC Pick out the 17H and the 18H of the first field.

Start of the first field.



PAL Pick out the 17H and the 18H of the first field.

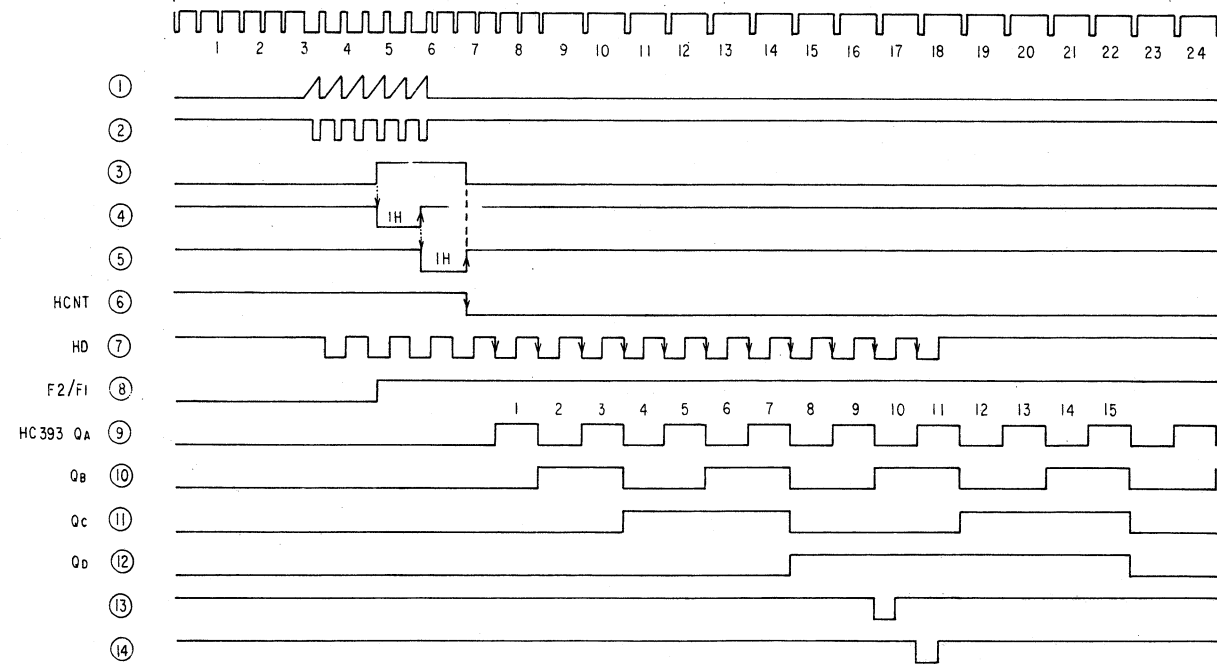
Start of the first field.



NTSC

Pick out the 17H and the 18H of the second field.

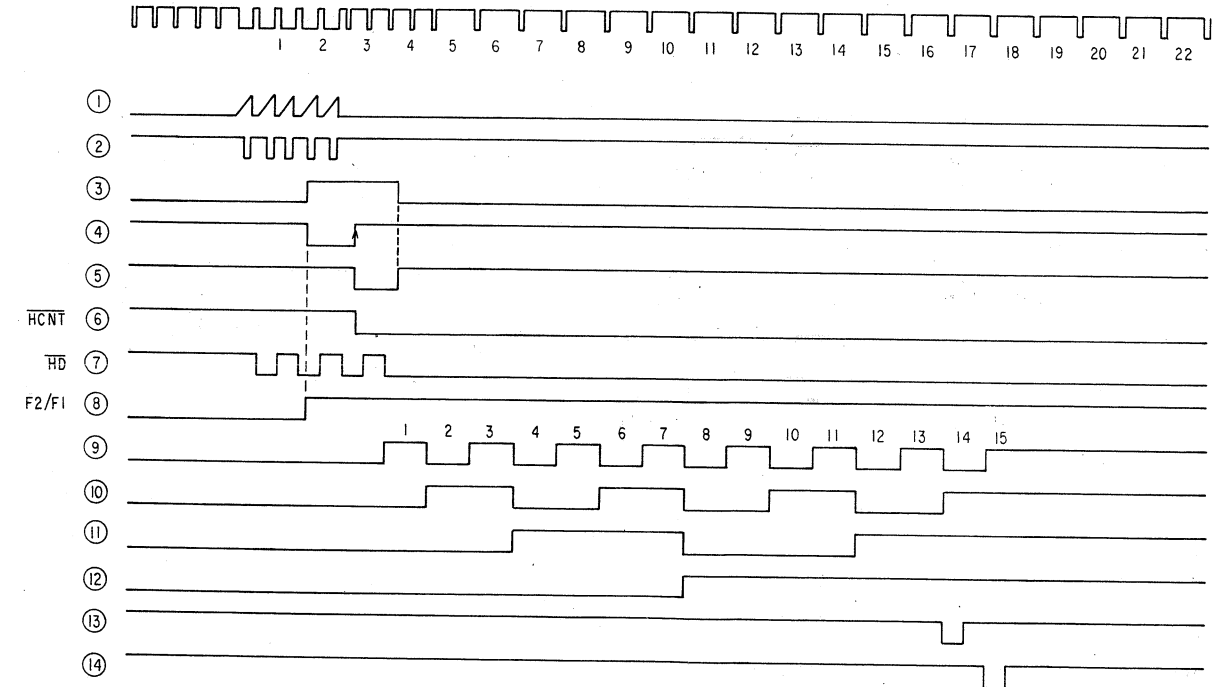
Start of the second field.



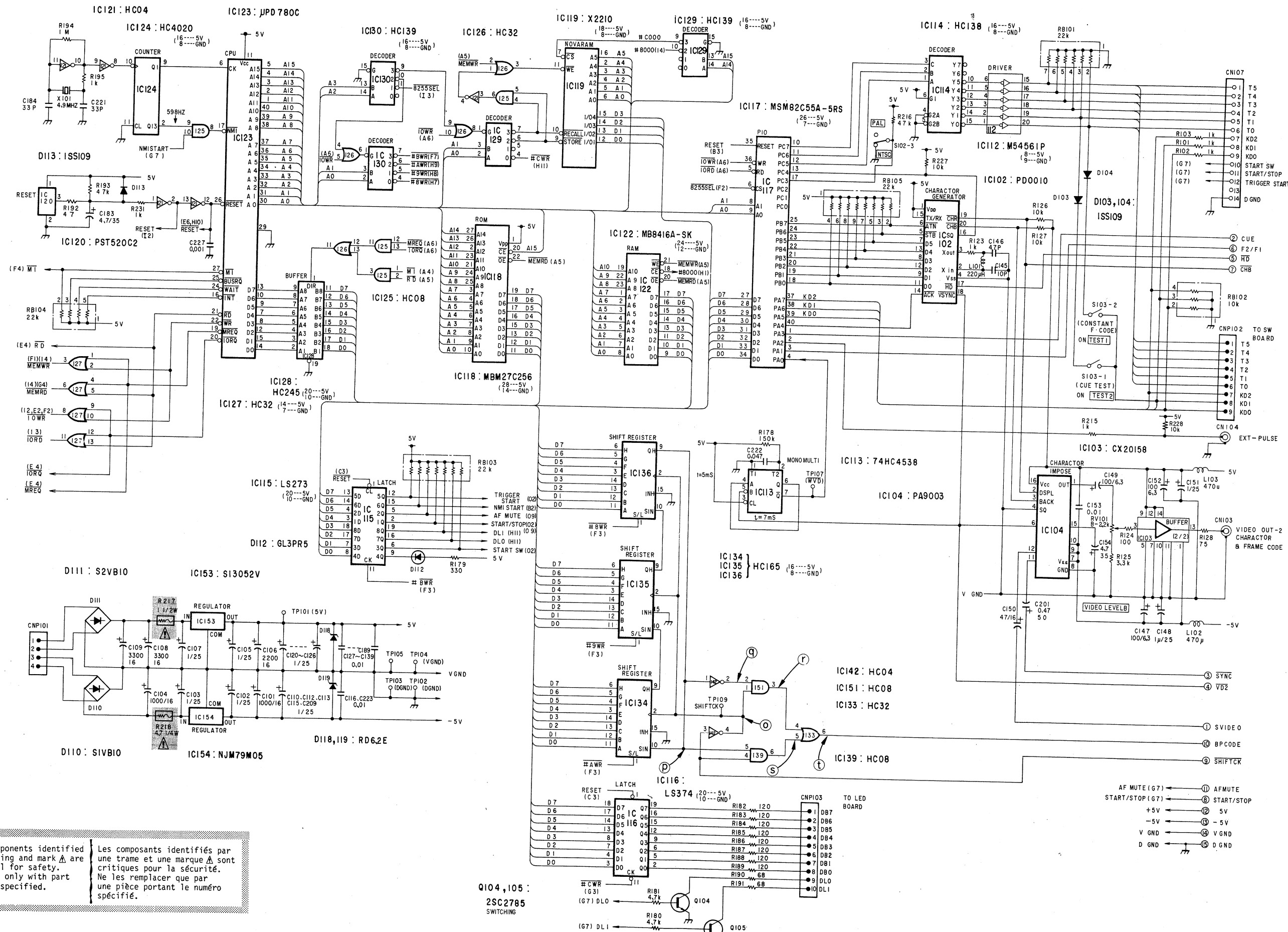
PAL

Pick out the 17H and the 18H of the second field.

Start of the second field.

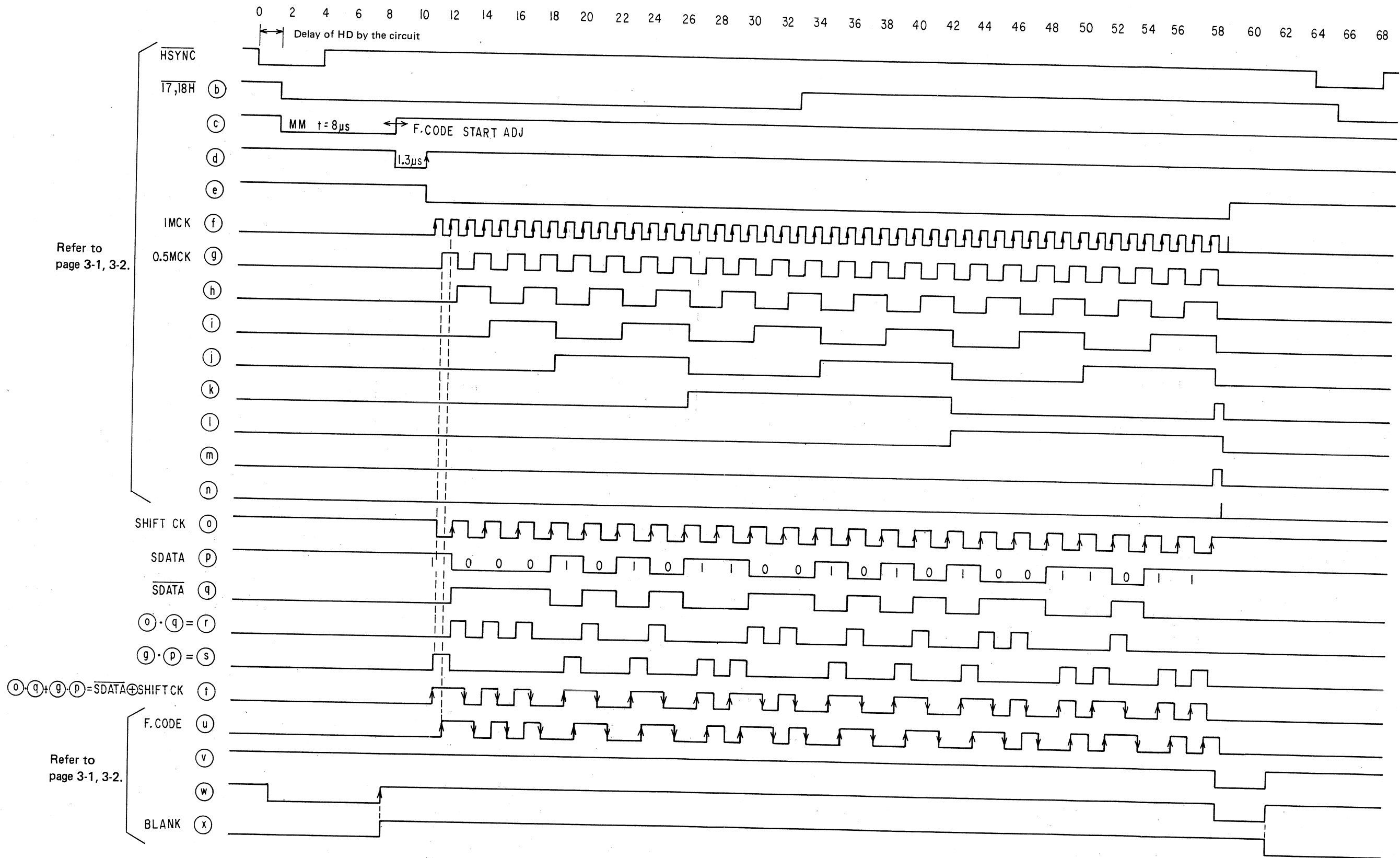


FCG-700 FCG-700



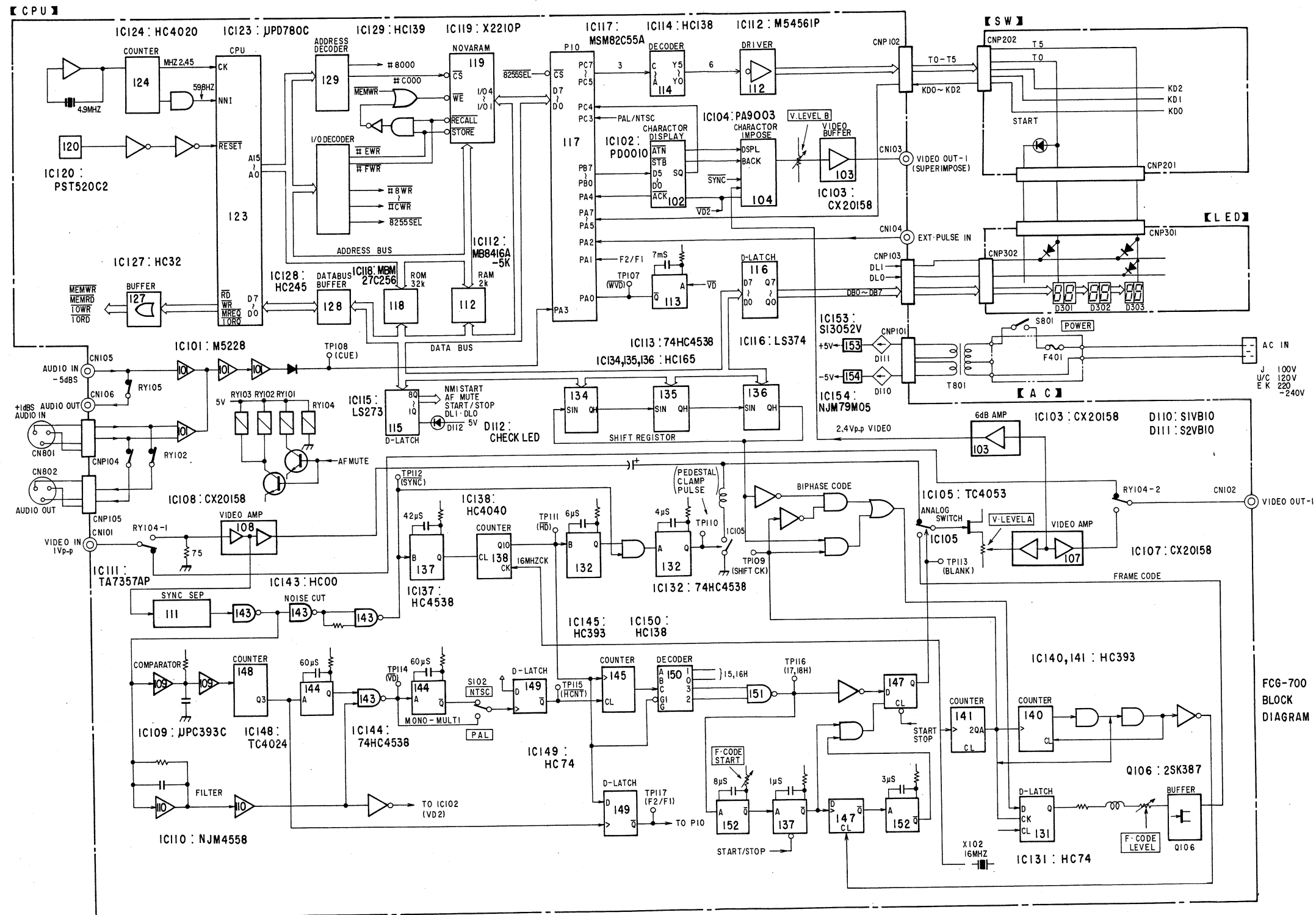
The components identified by shading and mark A are critical for safety. Replace only with part number specified.	Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
--	--

Timing chart of frame code generated.



CHAPTER 4 BLOCK DIAGRAM

4-1. OVERALL

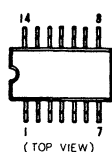


CHAPTER 5

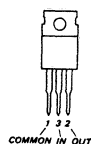
SCHEMATIC DIAGRAM AND PRINTED CIRCUIT BOARD

5-1. SEMICONDUCTOR PIN ASSIGNMENTS

CX20158



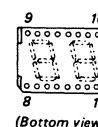
NJM79M05A



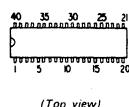
2SC2603-E



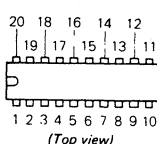
GL-7D201S



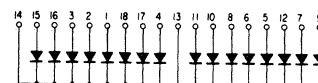
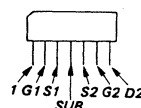
LH0080A
MSM82C55A-5RS



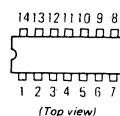
PD0010
SN74LS273N
SN74LS374N
TC74HC245P



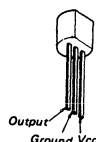
2SK389-GR



M5228P
MC74HC74N
TC4024BP
TC74HC00P
TC74HC04P
TC74HC08P
TC74HC32P
TC74HC393P



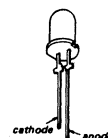
PST520C-2



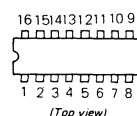
2SK523-K1



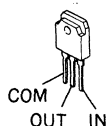
TLG114A



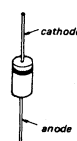
M54561P
PA9003
TC4053BP
TC74HC138P
TC74HC139P
TC74HC165P
TC74HC4020P
TC74HC4040P
TC74HC4538P



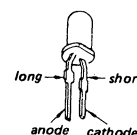
SI-3052V



10E-2
RD6.2E-B2



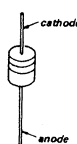
TLR123



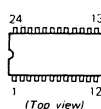
TA7357AP



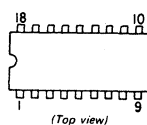
1SS119



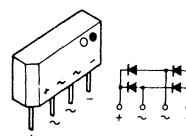
MB8416A-15P-SK



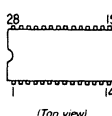
X2210D



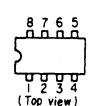
S1VB40



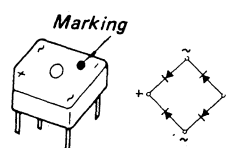
MBM27C256-25



μ PC393C
 μ PC4558C

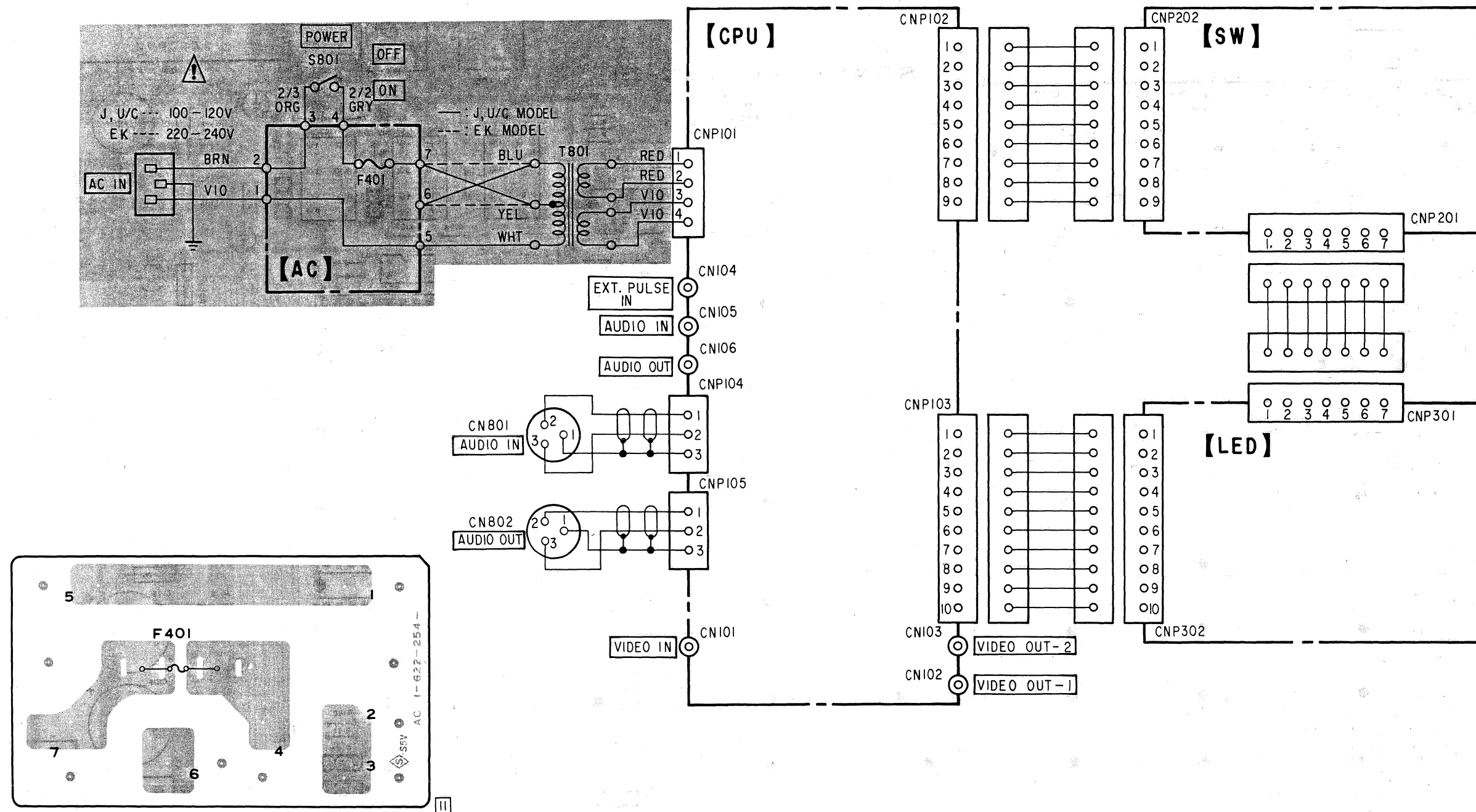


S2VB40



This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for writing. There is no text or other markings on the page.

5-2. FRAME WIRING

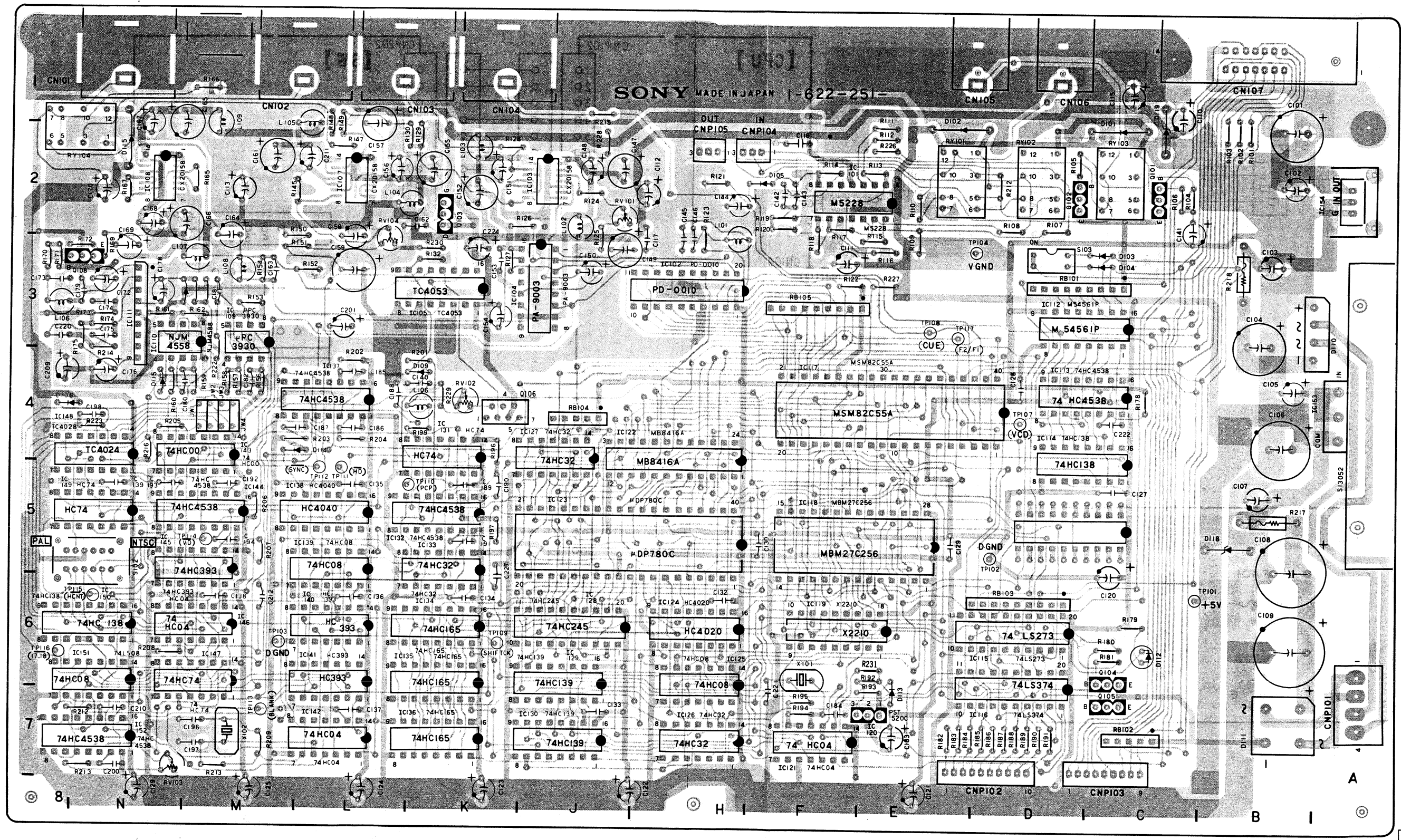


The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-3. CPU BOARD

— Soldering Side —



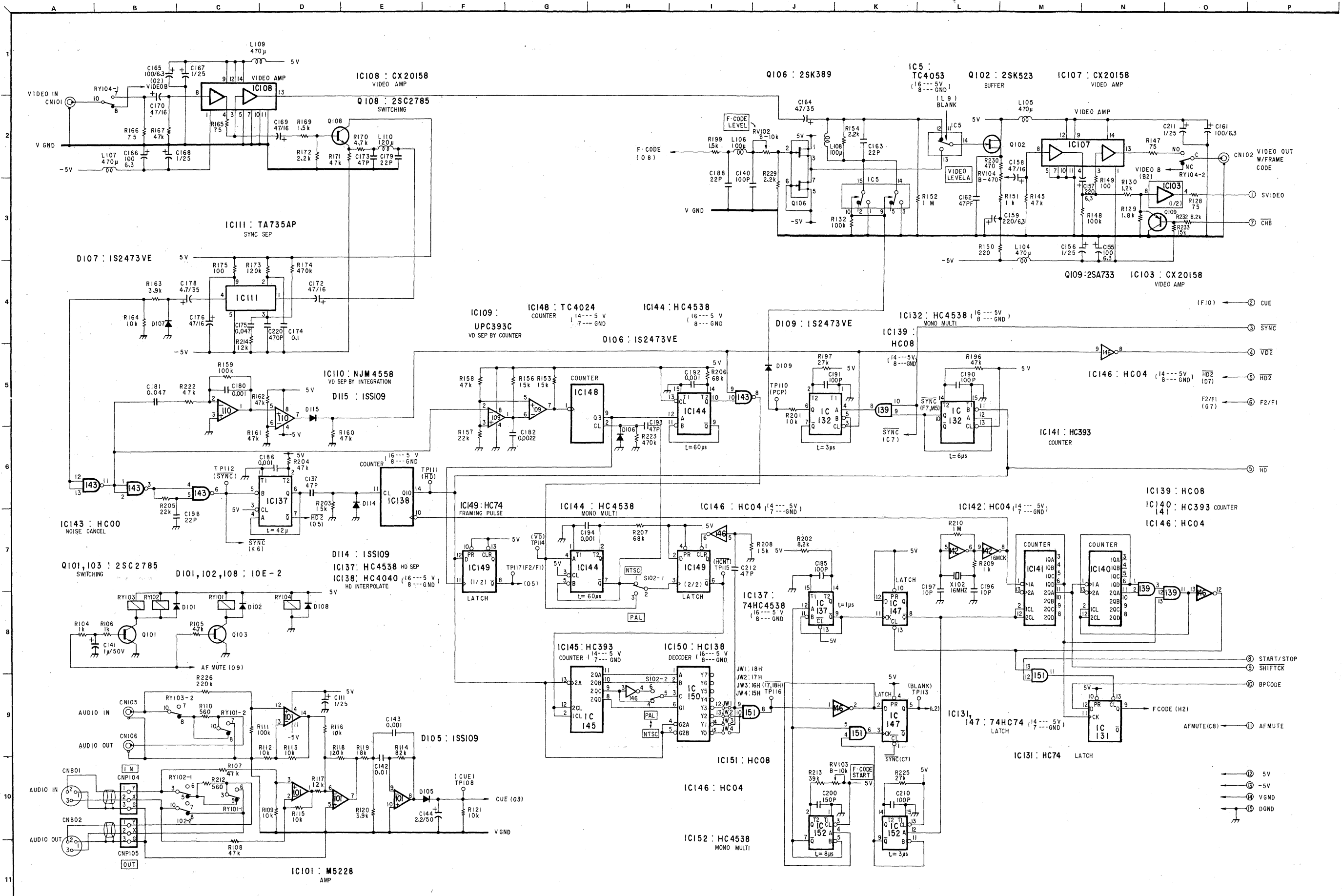
CN101	N-1	D101	C-2	D114	L-5	IC107	L-2	IC119	F-6	IC134, 135	K-6	IC149	N-5	Q105	C-7
CN102, 103	L-1	D102	E-2	D115	N-4	IC108	N-2	IC120	E-7	IC136	K-7	IC150, 151	N-6	Q106	K-4
CN104	K-1	D103, 104	C-3	D118	B-5	IC109	M-3	IC121	F-7	IC137	L-4	IC152	N-7	Q108	N-3
CN105	E-1	D105	F-2	D119	C-2	IC110, 111	N-3	IC122, 123	H-5	IC138, 139	L-5	IC153	A-4		
CN106	D-1	D106	N-4			IC112	D-3	IC124, 125	H-6	IC140, 141	L-6	IC154	A-2	RV101	J-2
CN107	B-1	D109	K-4	IC101	F-2	IC113	D-4	IC126	H-7	IC142	L-7			RV102	K-4
		D110	B-3	IC102	H-3	IC114	D-5	IC127	J-5	IC143	M-4	Q101	C-2	RV103	N-7
CNP101	A-7	D111	B-7	IC103	J-2	IC115, 116	D-6	IC128, 129	J-6	IC144, 145	M-5	Q102	D-2	RV104	L-3
CNP102	D-7	D112	C-6	IC104	J-3	IC117	E-4	IC130	J-7	IC146, 147	M-6	Q103	K-2		
CNP103	C-7	D113	E-7	IC105	K-3	IC118	F-5	IC131-133	K-5	IC148	N-4	Q104	C-6		

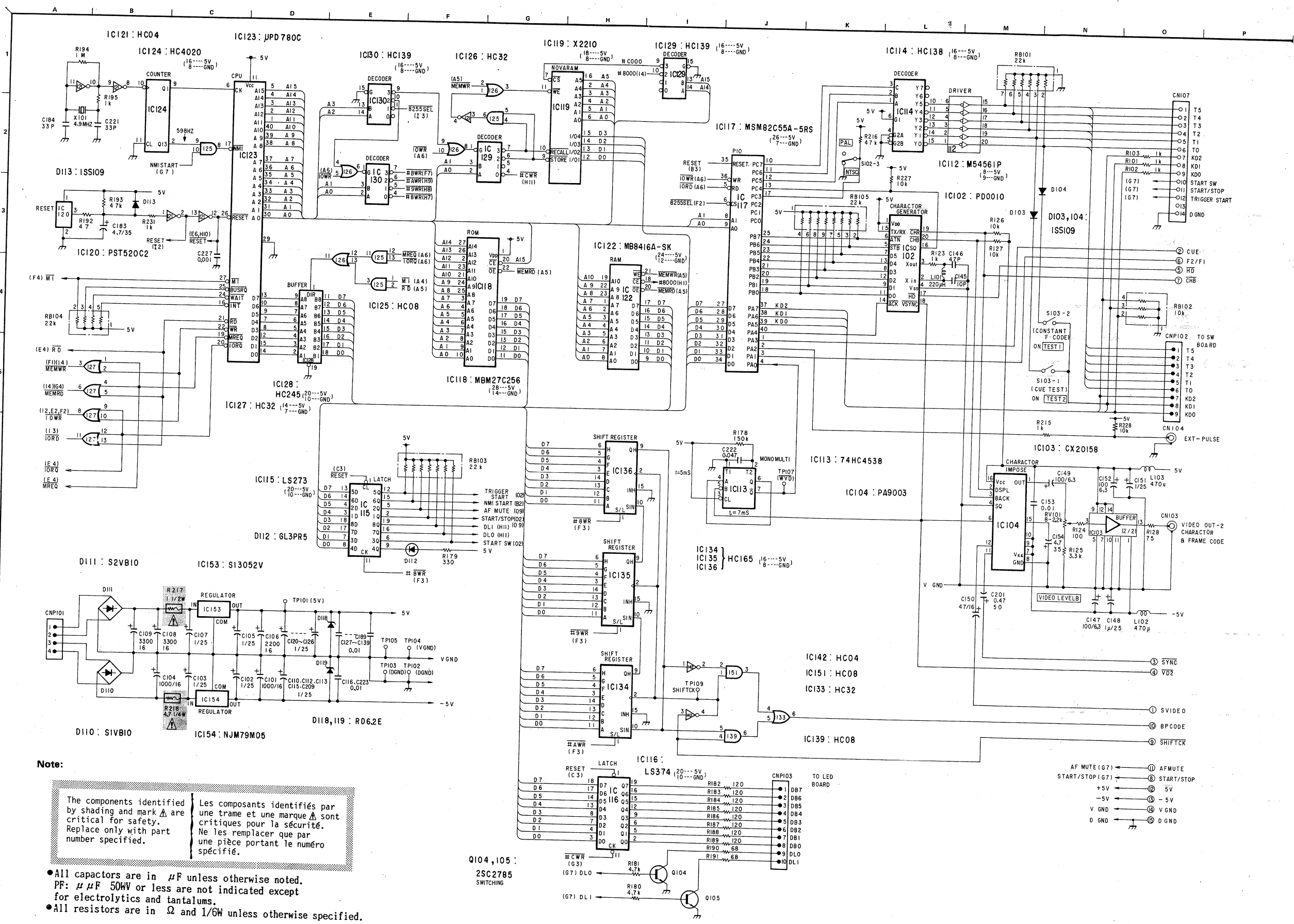
```

●          :componet-side pattern

```

FCG-700





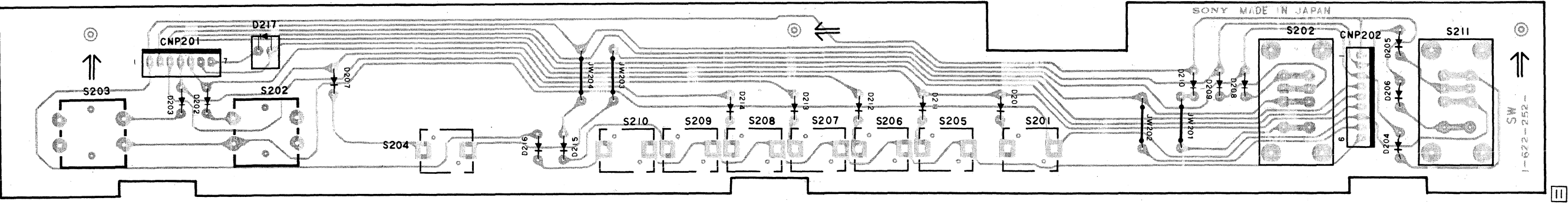
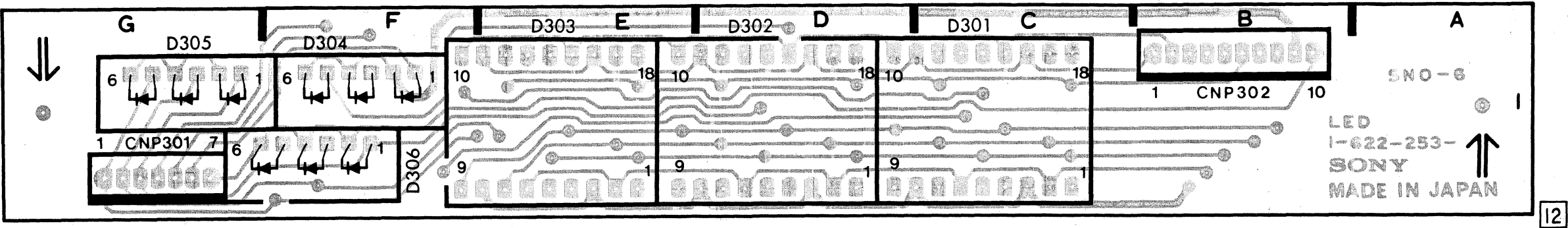
Note:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

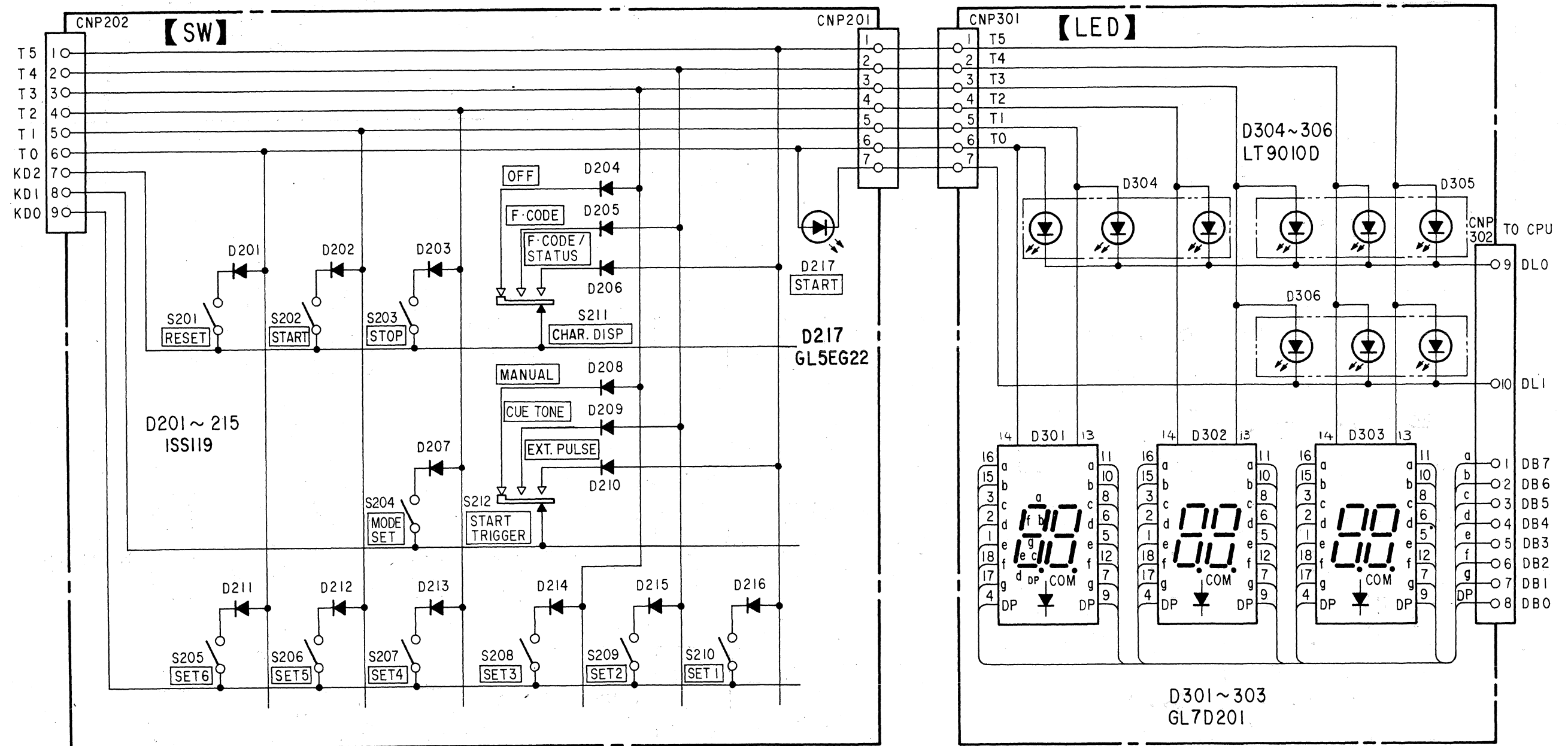
- All capacitors are in μF unless otherwise noted. PF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6W unless otherwise specified.

5-4. LED AND SWITCH BOARDS
— Soldering Side —



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A
B
C
D
E
F
G
H
I



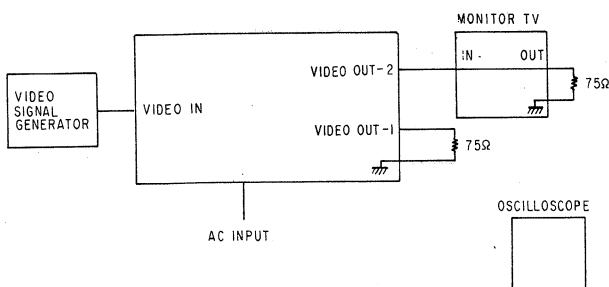
- All capacitors are in μF unless otherwise noted.
- PF: μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6W unless otherwise specified.
- : panel designation.

CHAPTER 6 ADJUSTMENTS

6-1. PREPARATION

1. A way of connecting.

- Connect a video signal generator to the video in jack.
- Connect a 75 Ω load to the video out-1 jack.
- Connect a monitor TV to the video out-2 jack.
- Connect a 75 Ω load to the monitor TV.



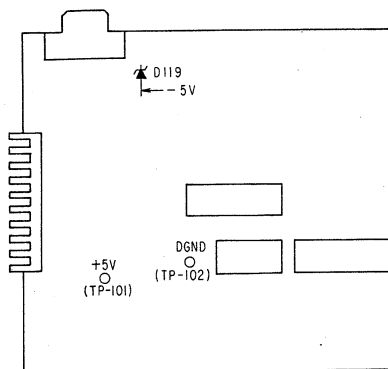
AC INPUT J 100V 50/60Hz
 UC 120V 50/60Hz
 EK 220/240V 50/60Hz

2. Set the switch of the CPU board.

- S102 U/C **NTSC** side
 EK **PAL** side
- S103 S103-1 and S103-2 are OFF.

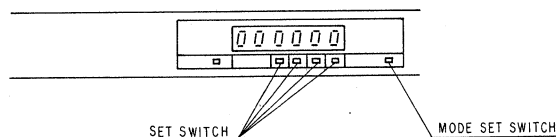
3. DC voltage check.

- Measure the voltage between TP101 and TP102.
 Specification 5 ± 0.15 V
- Measure the voltage between the cathode of D119 and TP102.
 Specification -5 ± 0.2 V



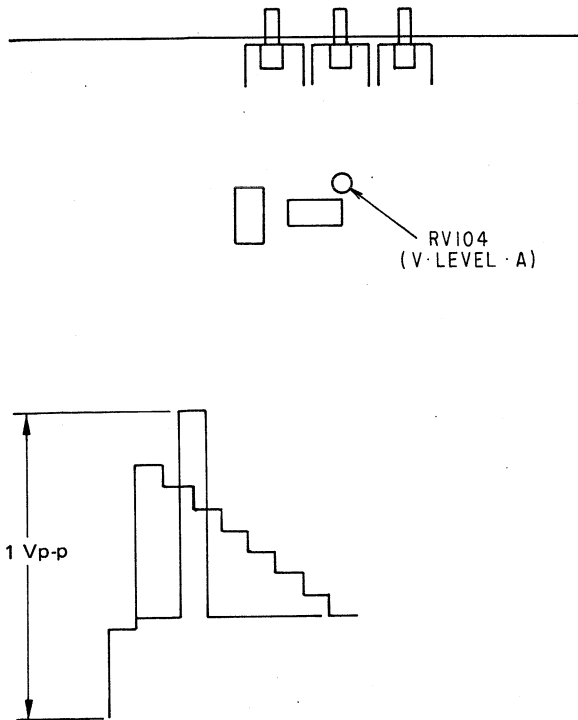
6-2. SET THE MODE

1. Turn on the power of FCG-700 and Push the MODE SET switch of the front panel.
2. Push the SET switch to express 1-**0000**
 U/C-0150 EK-0125
3. Press the MODE SET switch again and the SET switch at the end of right to express 2-**0000**.
4. Press the MODE SET switch again and make sure of the expression of **000000**.
5. Turn on/off the power and press the MODE SET switch. In this time, make sure that the number setted in the step 2 is expressed.
6. Press the MODE SET switch again and make sure that 2-**0** is expressed.



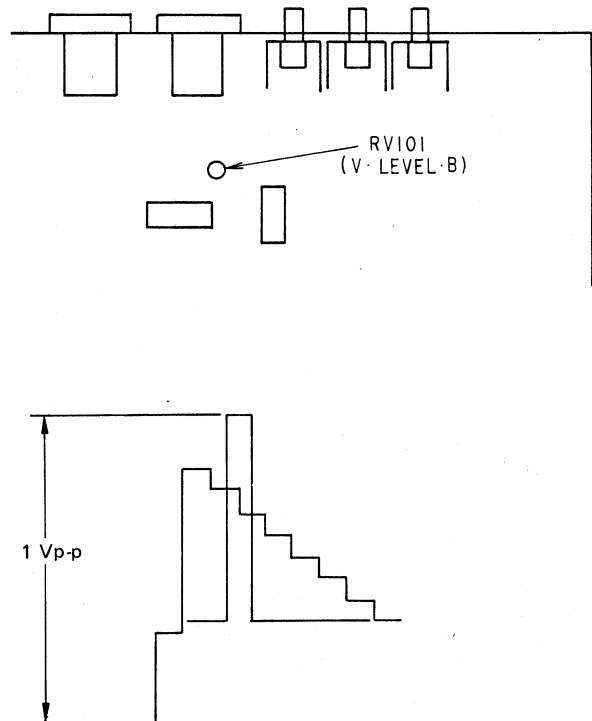
6-3. VIDEO OUT-1 OUTPUT LEVEL ADJUSTMENT

1. Input the EIA COLOR BAR signal and make sure Input level 1 Vp-p
2. Put 75 Ω load on the output of VIDEO OUT-1 and observe the both sides on the oscilloscope.
3. Adjust RV104 so that the output level may be 1 V ± 0.1 p-p at the p-p, watching the oscilloscope.
4. Turn off the power of FCG-700 and make sure that a waveform does not change compared with the waveform adjusted in the step 3.
(When the power is off, the input signal is through out by a relay.)



6-4. VIDEO OUT-2 OUTPUT LEVEL ADJUSTMENT

1. Connect 75 Ω load to the output of the VIDEO OUT-2 and observe the both sides on the oscilloscope.
2. Adjust RV101 so that the output level may be 1 ± 0.1 Vp-p, watching the oscilloscope.

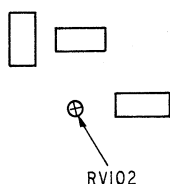
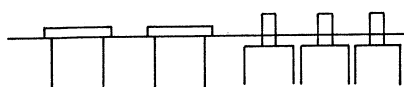
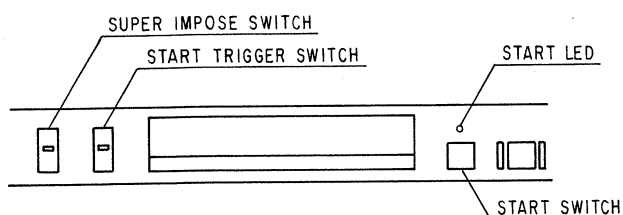


6-5. FRAME CODE LEVEL ADJUSTMENT

1. Connect a monitor TV to VIDEO OUT-2 and set the START TRIGGER switch to MANUAL.
2. Set the SUPER IMPOSE switch to F.CODE and press the START switch. In this time, make sure that the START LED lights.
3. After making sure that the frame code expression of the monitor TV increases, turn off the power.
4. Adjust RV102 so that the level of the frame code may be $80 \text{ IRE} \pm 10 \text{ IRE}$ (when a picture signal is 1 Vp-p, it is $570 \pm 60 \text{ mV}$), watching the oscilloscope.
Make sure of a waveform of the frame code.

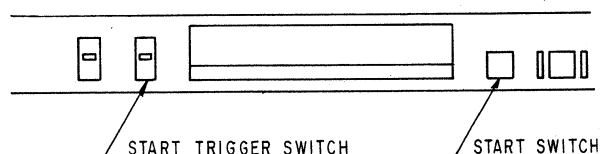
6-6. FRAME CODE TIMING ADJUSTMENT

1. Input the full field color bar and press the RESET button to express $\square\square\square\square$.
2. Set the START TRIGGER switch to MANUAL and press the START switch.
3. Move the V synchronism of the monitor TV and adjust RV103 so that the third white line may be on the center of border of white and yellow, making sure of the position of the frame code.
Note: Adjust under 19999 frame code.



6-7. CONFIRMATION OF PHONO INPUT/OUTPUT

1. Input the 1 kHz/-8 dBs signal to the AUDIO IN of the PHONO jack and turn off the START TRIGGER.
2. Turn off the power of FCG-700 and measure the AUDIO OUT level of PHONO jack.
Output level -8 dBs (through out by relay)
3. Turn on the power and measure the AUDIO OUT level of the PHONO jack.
Output level -8 dBs
4. Change over to CUE TONE at the START TRIGGER switch, press the START switch, and make sure that the output signal fails.



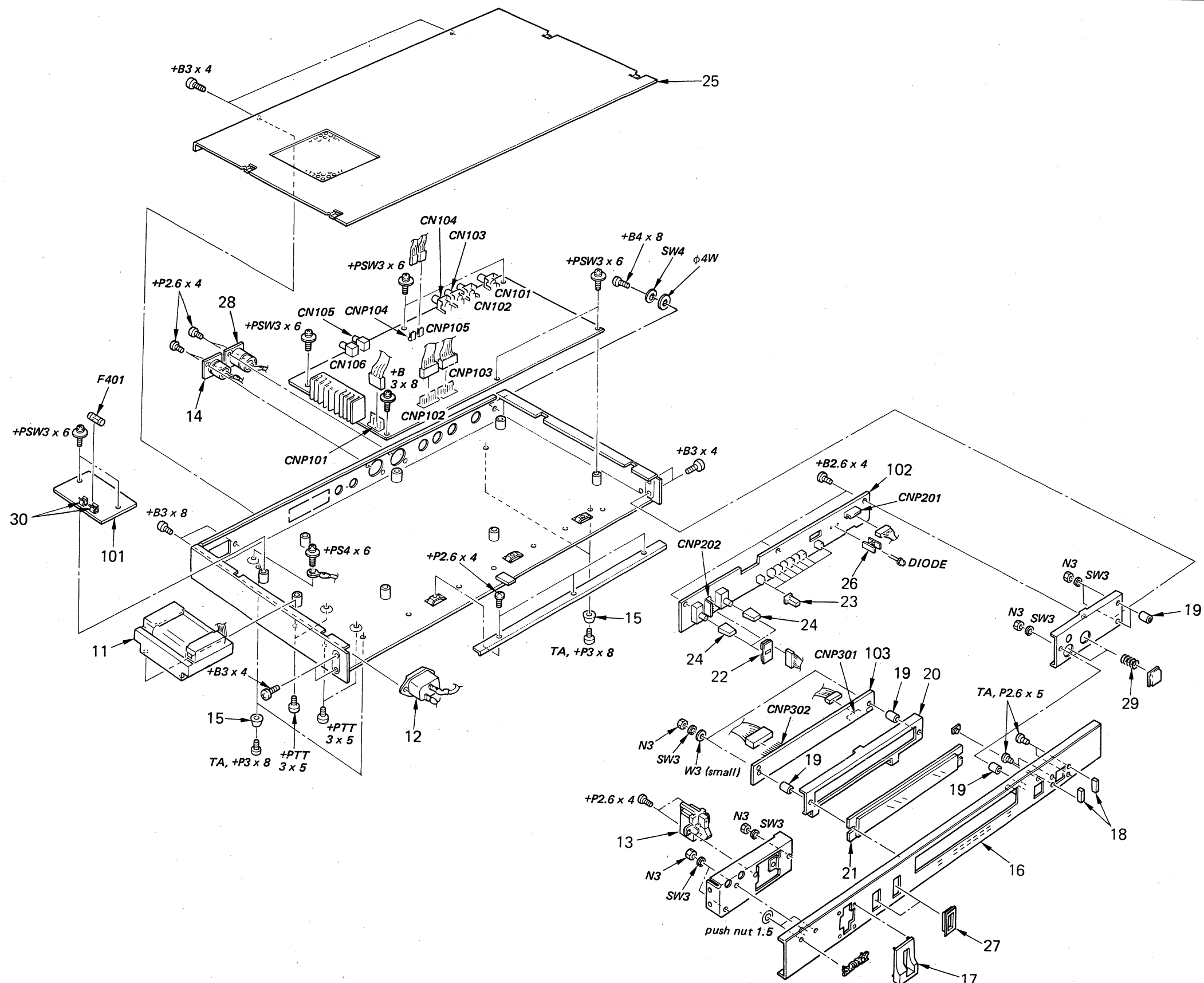
6-8. CONFIRMATION OF XLR INPUT/OUTPUT

1. Input the 1 kHz/+1 dBs signal to the AUDIO IN of the XLR and turn off the START TRIGGER switch.
2. Turn off the power of FCG-700 and measure level of the XLR AUDIO OUT.
Output level +1 dBs (through out by relay)
3. Turn on the power and measure the level of the XLR AUDIO OUT.
Output level +1 dBs
4. Change over to CUE TONE at the START TRIGGER switch, press the START switch, and make sure that the output signal fails.

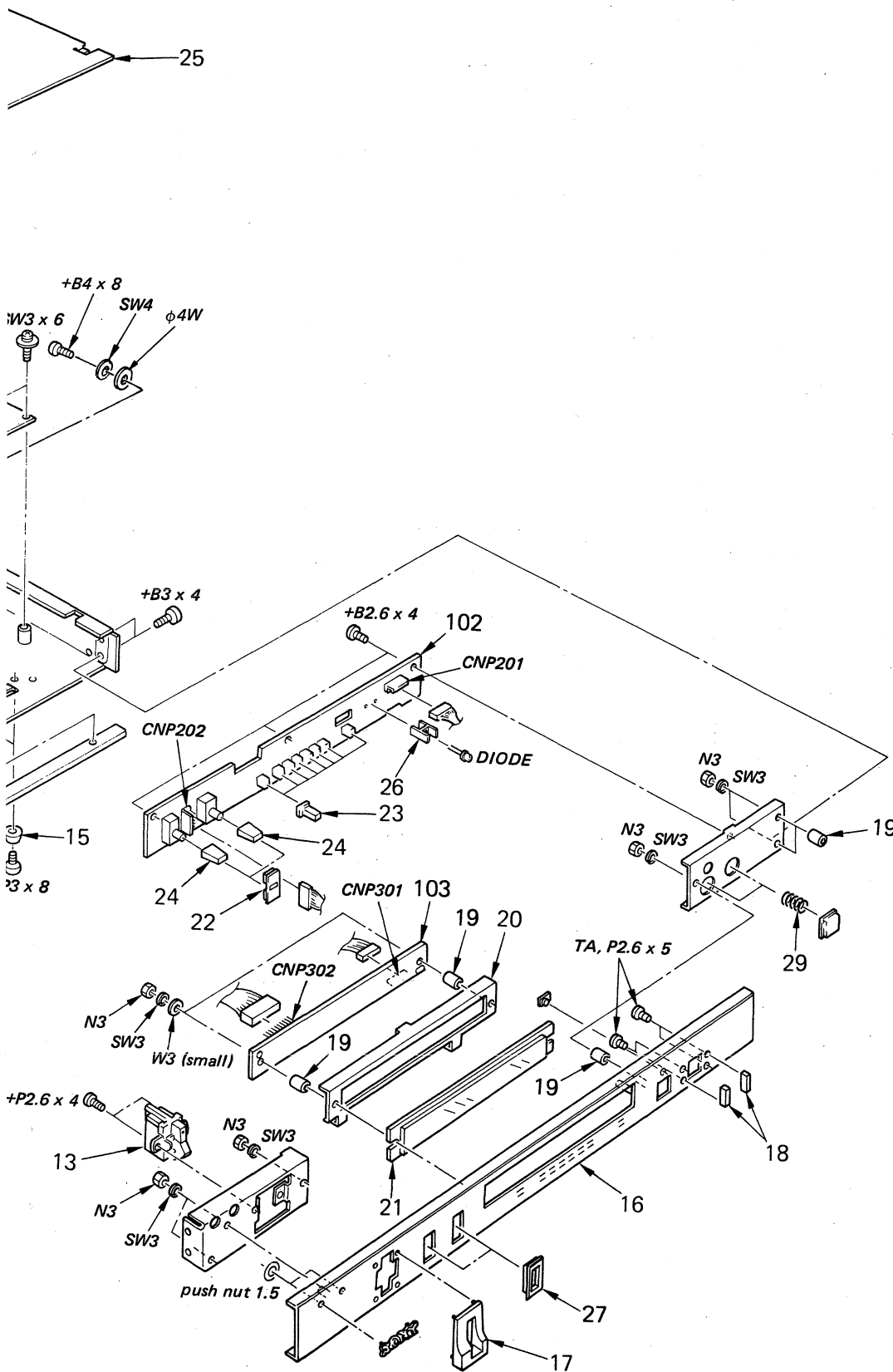
CHAPTER 7

7-1. EXPLODED VIEW

REPAIR PARTS AND FIXTURE



8 9 10 11 12 13 14



Ref.No.	Part No.	Description
ACCESSORY		
	X-2123-602-1	BRACKET ASSY, RACK
	A1-556-760-11	CORD, POWER (3 CORD) (FOR EK)
	A1-551-812-00	CORD, POWER (FOR U/C)
	2-297-913-00	WASHER (DIA.5), ORNAMENTAL
	3-769-135-11	CARD, WARRANTY (FOR U/C) REGISTRATION (FOR U/C) MANUAL, INSTRUCTION QUESTIONNAIRE (FOR U/C) SAFEGUARD, IMPORTANT (FOR U/C)
	7-613-096-60	CORD, VINYL, ROUND (3 CORE) (FOR EK) SCREW +RK 5x14 SCREW +PS 4x10

Ref.No.	Part No.	Description
15	2-092-326-XX	FOOT, RUBBER
16	*2-123-618-02	PANEL, FRONT
17	*2-251-642-00	GUARD, POWER SWITCH
18	*2-295-991-00	GUARD, SWITCH
19	*2-372-914-00	BEARING
20	2-123-603-01	PLATE, INDICATION
21	2-123-604-01	SHEET, SEGMENT, 7
22	*2-123-606-01	PLATE, BLIND, LEVER SW
23	2-371-607-00	KNOB (B), TACK SWITCH
24	3-668-028-21	KNOB (SMALL) LEVER SWITCH
25	*2-123-617-01	LID, UPPER
26	*3-161-137-01	SPACER, LED
27	*3-668-018-11	FRAME (MIDDLE), ORNAMENTAL
28	4-841-008-00	SPRING, COMPRESSION
30	1-533-183-11	HOLDER, FUSE
101	*1-622-254-11	PC BOARD, AC

Electrical Parts

F401	A1-532-817-11	FUSE, GLASS TUBE (FOR U/C)
	A1-532-610-XX	FUSE, TIME-LAG (FOR EK)
11	A1-448-881-11	TRANSFORMER, POWER
12	A1-509-546-00	3P INLET
13	A1-570-744-21	SWITCH, AC POWER
14	1-509-176-51	CONNECTOR (RECEPTACLE) 3P
28	1-509-184-51	CONNECTOR (RECEPTACLE) 3P

Miscellaneous Parts

*3-701-946-05	LABEL, FUSE (FOR U/C)
*3-701-948-07	LABEL, FUSE (FOR EK)
3-703-044-26	LABEL, CAUTION
3-703-043-21	LABEL, CAUTION, MAIN (FOR EK)
3-703-848-01	LABEL (N) SUB CAUTION (FOR U/C)
3-153-187-00	LABEL (A), FCC (FOR U/C)

The mechanical parts with no reference number in the exploded views are not supplied.
Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-2. ELECTRICAL PARTS LIST

Ref.No.	Part No.	Description
CPU MOUNT		
*A-6716-447-A MOUNTED PCB,CPU		
C101	1-124-555-00	ELECT 1000MF 20% 16V
C102	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C103	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C104	1-124-555-00	ELECT 1000MF 20% 16V
C105	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C106	1-124-556-11	ELECT 2200MF 20% 16V
C107	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C108	1-124-887-00	ELECT 3300MF 20% 16V
C109	1-124-887-00	ELECT 3300MF 20% 16V
C110	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C111	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C112	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C113	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C115	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C116	1-101-004-00	CERAMIC 0.01MF 50V
C117	1-101-004-00	CERAMIC 0.01MF 50V
C120	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C121	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C122	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C123	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C124	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C125	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C126	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C127	1-101-004-00	CERAMIC 0.01MF 50V
C128	1-101-004-00	CERAMIC 0.01MF 50V
C129	1-101-004-00	CERAMIC 0.01MF 50V
C130	1-101-004-00	CERAMIC 0.01MF 50V
C132	1-101-004-00	CERAMIC 0.01MF 50V
C133	1-101-004-00	CERAMIC 0.01MF 50V
C134	1-101-004-00	CERAMIC 0.01MF 50V
C135	1-101-004-00	CERAMIC 0.01MF 50V
C136	1-101-004-00	CERAMIC 0.01MF 50V
C137	1-101-004-00	CERAMIC 0.01MF 50V
C138	1-101-004-00	CERAMIC 0.01MF 50V
C139	1-101-004-00	CERAMIC 0.01MF 50V
C140	1-107-085-00	MICA 100PF 5% 50V
C141	1-123-611-00	ELECT 1MF 20% 50V
C142	1-130-483-00	MYLAR 0.01MF 5% 50V
C143	1-130-483-00	MYLAR 0.01MF 5% 50V
C144	1-124-257-00	ELECT 2.2MF 20% 50V
C145	1-107-202-00	MICA 10PF 5% 500V
C146	1-107-159-00	MICA 33PF 5% 50V
C147	1-123-661-00	ELECT 100MF 20% 6.3V
C148	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C149	1-123-661-00	ELECT 100MF 20% 6.3V

Ref.No.	Part No.	Description
C150	1-124-236-00	ELECT 47MF 20% 16V
C151	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C152	1-123-661-00	ELECT 100MF 20% 6.3V
C153	1-101-004-00	CERAMIC 0.01MF 50V
C154	1-124-245-00	ELECT 4.7MF 20% 35V
C155	1-123-661-00	ELECT 100MF 20% 6.3V
C156	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C157	1-124-444-00	ELECT 220MF 20% 6.3V
C158	1-124-236-00	ELECT 47MF 20% 16V
C159	1-124-444-00	ELECT 220MF 20% 6.3V
C161	1-123-661-00	ELECT 100MF 20% 6.3V
C162	1-107-077-00	MICA 47PF 5% 50V
C163	1-107-210-00	MICA 22PF 5% 500V
C164	1-124-245-00	ELECT 4.7MF 20% 35V
C165	1-123-661-00	ELECT 100MF 20% 6.3V
C166	1-123-661-00	ELECT 100MF 20% 6.3V
C167	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C168	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C169	1-124-236-00	ELECT 47MF 20% 16V
C170	1-124-236-00	ELECT 47MF 20% 16V
C172	1-124-236-00	ELECT 47MF 20% 16V
C173	1-101-880-00	CERAMIC 47PF 5% 50V
C174	1-130-495-00	MYLAR 0.1MF 5% 50V
C175	1-130-491-00	MYLAR 0.047MF 5% 50V
C176	1-124-236-00	ELECT 47MF 20% 16V
C178	1-124-245-00	ELECT 4.7MF 20% 35V
C179	1-102-959-00	CERAMIC 22PF 5% 50V
C180	1-130-471-00	MYLAR 0.001MF 5% 50V
C181	1-130-491-00	MYLAR 0.047MF 5% 50V
C182	1-130-475-00	MYLAR 0.0022MF 5% 50V
C183	1-124-245-00	ELECT 4.7MF 20% 35V
C184	1-102-963-00	CERAMIC 33PF 5% 50V
C185	1-107-085-00	MICA 100PF 5% 50V
C186	1-130-471-00	MYLAR 0.001MF 5% 50V
C187	1-101-880-00	CERAMIC 47PF 5% 50V
C188	1-102-959-00	CERAMIC 22PF 5% 50V
C189	1-101-004-00	CERAMIC 0.01MF 50V
C190	1-107-085-00	MICA 100PF 5% 50V
C191	1-107-085-00	MICA 100PF 5% 50V
C192	1-130-471-00	MYLAR 0.001MF 5% 50V
C193	1-101-880-00	CERAMIC 47PF 5% 50V
C194	1-130-471-00	MYLAR 0.001MF 5% 50V
C196	1-102-947-00	CERAMIC 10PF 5% 50V
C197	1-102-947-00	CERAMIC 10PF 5% 50V
C198	1-102-959-00	CERAMIC 22PF 5% 50V

Ref.No.	Part No.	Description
C200	1-109-539-00	MICA 150PF 5% 50V
C201	1-124-465-00	ELECT 0.47MF 20% 50V
C209	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C210	1-107-085-00	MICA 100PF 5% 50V
C211	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C212	1-101-880-00	CERAMIC 47PF 5% 50V
C220	1-130-467-00	MYLAR 470PF 5% 50V
C221	1-102-963-00	CERAMIC 33PF 5% 50V
C222	1-130-491-00	MYLAR 0.047MF 5% 50V
C224	1-127-506-00	ELECT(SOLID) 1MF 20% 25V
C227	1-130-471-00	MYLAR 0.001MF 5% 50V
CN101	1-560-751-21	CONNECTOR ASSY, BNC
CN102	1-560-751-21	CONNECTOR ASSY, BNC
CN103	1-560-751-21	CONNECTOR ASSY, BNC
CN104	1-560-751-21	CONNECTOR ASSY, BNC
CN105	1-562-770-21	JACK, PIN
CN106	1-562-770-21	JACK, PIN
CNI118	1-526-659-00	SOCKET, IC(DP)28P
CNI123	1-526-662-21	SOCKET, IC(DP)40P
CNP101	*1-564-241-00	PIN, CONNECTOR 4P
CNP102	*1-564-343-00	PIN, CONNECTOR 9P
CNP103	*1-560-471-00	PIN, CONNECTOR 10P
CNP104	*1-560-466-00	PIN, CONNECTOR 3P
CNP105	*1-560-466-00	PIN, CONNECTOR 3P
D101	8-719-200-02	DIODE 10E-2
D102	8-719-200-02	DIODE 10E-2
D103	8-719-911-19	DIODE 1SS119
D104	8-719-911-19	DIODE 1SS119
D105	8-719-911-19	DIODE 1SS119
D106	8-719-911-19	DIODE 1SS119
D107	8-719-911-19	DIODE 1SS119
D108	8-719-200-02	DIODE 10E-2
D109	8-719-911-19	DIODE 1SS119
D110	8-719-511-40	DIODE S1VB40
D111	9-982-270-00	DIODE S2VB40
D112	8-719-812-31	DIODE TLR123
D113	8-719-911-19	DIODE 1SS119
D114	8-719-911-19	DIODE 1SS119
D115	8-719-911-19	DIODE 1SS119
D118	8-719-100-38	DIODE RD6.2EB2
D119	8-719-100-38	DIODE RD6.2EB2
IC101	8-759-603-52	IC M5228P (MITSUBISHI)
IC102	8-759-612-69	IC PDX010 (PIONEER)
IC103	8-752-015-81	IC CX20158 (SONY)
IC104	8-759-912-67	IC PA9003 (PIONEER)
IC105	8-759-240-53	IC TC4053BP (TOSHIBA)

Ref.No.	Part No.	Description
IC107	8-752-015-81	IC CX20158 (SONY)
IC108	8-752-015-81	IC CX20158 (SONY)
IC109	8-759-103-93	IC UPC393C (NEC)
IC110	8-759-145-58	IC UPC4558C (JRC)
IC111	8-759-201-47	IC TA7357AP (TOSHIBA)
IC112	8-759-605-22	IC M54561P (MITSUBISHI)
IC113	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC114	8-759-202-26	IC TC74HC138P (TOSHIBA)
IC115	8-759-902-73	IC SN74LS273N (TI)
IC116	8-759-903-74	IC SN74LS374N (TI)
IC117	8-759-920-96	IC MS82C55A-5RS (OKI)
IC118	8-759-746-63	IC MBM27C256-25 (FUJITSU)
IC119	8-759-909-34	IC X2210D (XICOR)
IC120	8-759-913-42	IC PST520C-2 (MITSUMI)
IC121	8-759-202-74	IC TC74HC04P (TOSHIBA)
IC122	8-759-911-93	IC MB8416A-15P-SK
IC123	8-759-916-80	IC LH0080A (SHARP)
IC124	8-759-203-64	IC TC74HC4020P (TOSHIBA)
IC125	8-759-202-14	IC TC74HC08P (TOSHIBA)
IC126	8-759-202-21	IC TC74HC32P (TOSHIBA)
IC127	8-759-202-21	IC TC74HC32P (TOSHIBA)
IC128	8-759-202-56	IC TC74HC245P (TOSHIBA)
IC129	8-759-202-89	IC TC74HC139P (TOSHIBA)
IC130	8-759-202-89	IC TC74HC139P (TOSHIBA)
IC131	8-759-000-99	IC MC74HC74N
IC132	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC133	8-759-202-21	IC TC74HC32P (TOSHIBA)
IC134	8-759-202-97	IC TC74HC165P (TOSHIBA)
IC135	8-759-202-97	IC TC74HC165P (TOSHIBA)
IC136	8-759-202-97	IC TC74HC165P (TOSHIBA)
IC137	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC138	8-759-203-68	IC TC74HC4040P (TOSHIBA)
IC139	8-759-202-14	IC TC74HC08P (TOSHIBA)
IC140	8-759-203-40	IC TC74HC393P (TOSHIBA)
IC141	8-759-203-40	IC TC74HC393P (TOSHIBA)
IC142	8-759-202-74	IC TC74HC04P (TOSHIBA)
IC143	8-759-202-11	IC TC74HC00P (TOSHIBA)
IC144	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC145	8-759-203-40	IC TC74HC393P (TOSHIBA)
IC146	8-759-202-74	IC TC74HC04P (TOSHIBA)
IC147	8-759-000-99	IC MC74HC74N (MOTOROLA)
IC148	8-759-240-24	IC TC4024BP (TOSHIBA)
IC149	8-759-000-99	IC MC74HC74N (MOTOROLA)
IC150	8-759-202-26	IC TC74HC138P (TOSHIBA)
IC151	8-759-202-14	IC TC74HC08P (TOSHIBA)

Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

FCG-700 FCG-700

Ref.No.	Part No.	Descreption
C200	1-109-539-00	MICA 150PF 5% 50V
C201	1-124-465-00	ELECT 0.47MF 20% 50V
C209	1-127-506-00	ELECT (SOLID) 1MF 20% 25V
C210	1-107-085-00	MICA 100PF 5% 50V
C211	1-127-506-00	ELECT (SOLID) 1MF 20% 25V
C212	1-101-880-00	CERAMIC 47PF 5% 50V
C220	1-130-467-00	MYLAR 470PF 5% 50V
C221	1-102-963-00	CERAMIC 33PF 5% 50V
C222	1-130-491-00	MYLAR 0.047MF 5% 50V
C224	1-127-506-00	ELECT (SOLID) 1MF 20% 25V
C227	1-130-471-00	MYLAR 0.001MF 5% 50V
CN101	1-560-751-21	CONNECTOR ASSY, BNC
CN102	1-560-751-21	CONNECTOR ASSY, BNC
CN103	1-560-751-21	CONNECTOR ASSY, BNC
CN104	1-560-751-21	CONNECTOR ASSY, BNC
CN105	1-562-770-21	JACK, PIN
CN106	1-562-770-21	JACK, PIN
CN118	1-526-659-00	SOCKET, IC (DP) 28P
CN1123	1-526-662-21	SOCKET, IC (DP) 40P
CNP101	*1-564-241-00	PIN, CONNECTOR 4P
CNP102	*1-564-343-00	PIN, CONNECTOR 9P
CNP103	*1-560-471-00	PIN, CONNECTOR 10P
CNP104	*1-560-466-00	PIN, CONNECTOR 3P
CNP105	*1-560-466-00	PIN, CONNECTOR 3P
D101	8-719-200-02	DIODE 10E-2
D102	8-719-200-02	DIODE 10E-2
D103	8-719-911-19	DIODE 1SS119
D104	8-719-911-19	DIODE 1SS119
D105	8-719-911-19	DIODE 1SS119
D106	8-719-911-19	DIODE 1SS119
D107	8-719-911-19	DIODE 1SS119
D108	8-719-200-02	DIODE 10E-2
D109	8-719-911-19	DIODE 1SS119
D110	8-719-511-40	DIODE S1VB40
D111	9-982-270-00	DIODE S2VB40
D112	8-719-812-31	DIODE TLR123
D113	8-719-911-19	DIODE 1SS119
D114	8-719-911-19	DIODE 1SS119
D115	8-719-911-19	DIODE 1SS119
D118	8-719-100-38	DIODE RD6.2EB2
D119	8-719-100-38	DIODE RD6.2EB2
IC101	8-759-603-52	IC M5228P (MITSUBISHI)
IC102	8-759-612-69	IC PD0010 (PIONNER)
IC103	8-752-015-81	IC CX20158 (SONY)
IC104	8-759-912-67	IC PA9003 (PIONEER)
IC105	8-759-240-53	IC TC4053BP (TOSHIBA)

Ref.No.	Part No.	Descreption
IC107	8-752-015-81	IC CX20158 (SONY)
IC108	8-752-015-81	IC CX20158 (SONY)
IC109	8-759-103-93	IC UPC393C (NEC)
IC110	8-759-145-58	IC UPC4558C (JRC)
IC111	8-759-201-47	IC TA7357AP (TOSHIBA)
IC112	8-759-605-22	IC M54561P (MITSUBISHI)
IC113	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC114	8-759-202-26	IC TC74HC138P (TOSHIBA)
IC115	8-759-902-73	IC SN74LS273N (TI)
IC116	8-759-903-74	IC SN74LS374N (TI)
IC117	8-759-920-96	IC MSM82C55A-5RS (OKI)
IC118	8-759-746-63	IC MBM27C256-25 (FUJITSU)
IC119	8-759-909-34	IC X2210D (XICOR)
IC120	8-759-913-42	IC PST520C-2 (MITSUMI)
IC121	8-759-202-74	IC TC74HC04P (TOSHIBA)
IC122	8-759-911-93	IC MB8416A-15P-SK
IC123	8-759-916-80	IC LHO080A (SHARP)
IC124	8-759-203-64	IC TC74HC4020P (TOSHIBA)
IC125	8-759-202-14	IC TC74HC08P (TOSHIBA)
IC126	8-759-202-21	IC TC74HC32P (TOSHIBA)
IC127	8-759-202-21	IC TC74HC32P (TOSHIBA)
IC128	8-759-202-56	IC TC74HC245P (TOSHIBA)
IC129	8-759-202-89	IC TC74HC139P (TOSHIBA)
IC130	8-759-202-89	IC TC74HC139P (TOSHIBA)
IC131	8-759-000-99	IC MC74HC74N
IC132	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC133	8-759-202-21	IC TC74HC32P (TOSHIBA)
IC134	8-759-202-97	IC TC74HC165P (TOSHIBA)
IC135	8-759-202-97	IC TC74HC165P (TOSHIBA)
IC136	8-759-202-97	IC TC74HC165P (TOSHIBA)
IC137	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC138	8-759-203-68	IC TC74HC4040P (TOSHIBA)
IC139	8-759-202-14	IC TC74HC08P (TOSHIBA)
IC140	8-759-203-40	IC TC74HC393P (TOSHIBA)
IC141	8-759-203-40	IC TC74HC393P (TOSHIBA)
IC142	8-759-202-74	IC TC74HC04P (TOSHIBA)
IC143	8-759-202-11	IC TC74HC00P (TOSHIBA)
IC144	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC145	8-759-203-40	IC TC74HC393P (TOSHIBA)
IC146	8-759-202-74	IC TC74HC04P (TOSHIBA)
IC147	8-759-000-99	IC MC74HC74N (MOTOROLA)
IC148	8-759-240-24	IC TCA024BP (TOSHIBA)
IC149	8-759-000-99	IC MC74HC74N (MOTOROLA)
IC150	8-759-202-26	IC TC74HC138P (TOSHIBA)
IC151	8-759-202-14	IC TC74HC08P (TOSHIBA)

Ref.No.	Part No.	Descreption
IC152	8-759-203-83	IC TC74HC4538P (TOSHIBA)
IC153	8-749-930-52	IC SI-3052V (SANKEN)
IC154	8-759-700-20	IC NJM79M05A (JRC)
L101	1-408-425-00	MICRO INDUCTOR 220UH
L102	1-408-429-00	MICRO INDUCTOR 470UH
L103	1-408-429-00	MICRO INDUCTOR 470UH
L104	1-408-429-00	MICRO INDUCTOR 470UH
L105	1-408-429-00	MICRO INDUCTOR 470UH
L106	1-408-421-00	MICRO INDUCTOR 100UH
L107	1-408-429-00	MICRO INDUCTOR 470UH
L108	1-408-422-31	MICRO INDUCTOR 120UH
L109	1-408-429-00	MICRO INDUCTOR 470UH
L110	1-408-422-00	MICRO INDUCTOR 120UH
Q101	8-729-606-32	TRANSISTOR 2SC2603-E
Q102	8-729-105-70	TRANSISTOR 2SK523-K1
Q103	8-729-606-32	TRANSISTOR 2SC2603-E
Q104	8-729-606-32	TRANSISTOR 2SC2603-E
Q105	8-729-606-32	TRANSISTOR 2SC2603-E
Q106	8-729-203-21	TRANSISTOR 2SK389-GR
Q108	8-729-606-32	TRANSISTOR 2SC2603-E
Q109	8-729-173-38	TRANSISTOR 2SA733-8
R101	1-249-417-11	CARBON 1K 5% 1/6W
R102	1-249-417-11	CARBON 1K 5% 1/6W
R103	1-249-417-11	CARBON 1K 5% 1/6W
R104	1-249-417-11	CARBON 1K 5% 1/6W
R105	1-249-425-11	CARBON 4.7K 5% 1/6W
R106	1-249-417-11	CARBON 1K 5% 1/6W
R107	1-249-437-11	CARBON 47K 5% 1/6W
R108	1-249-437-11	CARBON 47K 5% 1/6W
R109	1-249-429-11	CARBON 10K 5% 1/6W
R110	1-249-414-11	CARBON 560 5% 1/6W
R111	1-249-441-11	CARBON 100K 5% 1/6W
R112	1-249-429-11	CARBON 10K 5% 1/6W
R113	1-249-429-11	CARBON 10K 5% 1/6W
R114	1-249-440-11	CARBON 82K 5% 1/6W
R115	1-249-429-11	CARBON 10K 5% 1/6W
R116	1-249-429-11	CARBON 10K 5% 1/6W
R117	1-249-430-11	CARBON 12K 5% 1/6W
R118	1-247-881-00	CARBON 120K 5% 1/6W
R119	1-249-432-11	CARBON 18K 5% 1/6W
R120	1-249-424-11	CARBON 3.9K 5% 1/6W
R121	1-249-429-11	CARBON 10K 5% 1/6W
R122	1-249-429-11	CARBON 10K 5% 1/6W
R123	1-249-417-11	CARBON 1K 5% 1/6W
R124	1-249-405-11	CARBON 100 5% 1/6W
R125	1-249-423-11	CARBON 3.3K 5% 1/6W

Ref.No.	Part No.	Descreption
R126	1-249-429-11	CARBON 10K 5% 1/6W
R127	1-249-429-11	CARBON 10K 5% 1/6W
R128	1-215-394-00	CARBON 75 5% 1/6W
R129	1-249-420-11	CARBON 1.8K 5% 1/6W
R130	1-249-418-11	CARBON 1.2K 5% 1/6W
R132	1-249-441-11	CARBON 100K 5% 1/6W
R145	1-249-437-11	CARBON 47K 5% 1/6W
R147	1-215-394-00	CARBON 75 5% 1/6W
R148	1-249-441-11	CARBON 100K 5% 1/6W
R149	1-249-405-11	CARBON 100 5% 1/6W
R150	1-249-409-11	CARBON 220 5% 1/6W
R151	1-249-416-11	CARBON 820 5% 1/6W
R152	1-215-493-00	CARBON 1M 5% 1/6W
R153	1-249-431-11	CARBON 15K 5% 1/6W
R154	1-249-421-11	CARBON 2.2K 5% 1/6W
R156	1-249-431-11	CARBON 15K 5% 1/6W
R157	1-249-433-11	CARBON 22K 5% 1/6W
R158	1-249-437-11	CARBON 47K 5% 1/6W
R159	1-249-441-11	CARBON 100K 5% 1/6W
R160	1-249-437-11	CARBON 47K 5% 1/6W
R161	1-249-437-11	CARBON 47K 5% 1/6W
R162	1-249-437-11	CARBON 47K 5% 1/6W
R163	1-249-424-11	CARBON 3.9K 5% 1/6W
R164	1-249-429-11	CARBON 10K 5% 1/6W
R165	1-215-394-00	CARBON 75 5% 1/6W
R166	1-215-394-00	CARBON 75 5% 1/6W
R167	1-249-437-11	CARBON 47K 5% 1/6W
R169	1-249-419-11	CARBON 1.5K 5% 1/6W
R170	1-249-425-11	CARBON 4.7K 5% 1/6W
R171	1-249-425-11	CARBON 4.7K 5% 1/6W
R172	1-249-421-11	CARBON 2.2K 5% 1/6W
R173	1-247-881-00	CARBON 120K 5% 1/6W
R174	1-247-895-00	CARBON 470K 5% 1/6W
R175	1-249-405-11	CARBON 100 5% 1/6W
R178	1-247-883-00	CARBON 150K 5% 1/6W
R179	1-249-411-11	CARBON 330 5% 1/6W
R180	1-249-425-11	CARBON 4.7K 5% 1/6W
R181	1-249-425-11	CARBON 4.7K 5% 1/6W
R182	1-249-406-11	CARBON 120 5% 1/6W
R183	1-249-406-11	CARBON 120 5% 1/6W
R184	1-249-406-11	CARBON 120 5% 1/6W
R185	1-249-406-11	CARBON 120 5% 1/6W
R186	1-249-406-11	CARBON 120 5% 1/6W
R187	1-249-406-11	CARBON 120 5% 1/6W
R188	1-249-406-11	CARBON 120 5% 1/6W

Ref.No.	Part No.	Description
R189	1-249-406-11	CARBON 120 5% 1/6W
R190	1-249-400-11	CARBON 39 5% 1/6W
R191	1-249-400-11	CARBON 39 5% 1/6W
R192	1-249-401-11	CARBON 47 5% 1/6W
R193	1-249-437-11	CARBON 47K 5% 1/6W
R194	1-215-493-00	CARBON 1M 5% 1/6W
R195	1-249-417-11	CARBON 1K 5% 1/6W
R196	1-249-437-11	CARBON 47K 5% 1/6W
R197	1-249-434-11	CARBON 27K 5% 1/6W
R199	1-249-419-11	CARBON 1.5K 5% 1/6W
R201	1-249-429-11	CARBON 10K 5% 1/6W
R202	1-249-428-11	CARBON 8.2K 5% 1/6W
R203	1-249-431-11	CARBON 15K 5% 1/6W
R204	1-249-437-11	CARBON 47K 5% 1/6W
R205	1-249-433-11	CARBON 22K 5% 1/6W
R206	1-249-439-11	CARBON 68K 5% 1/6W
R207	1-249-439-11	CARBON 68K 5% 1/6W
R208	1-249-431-11	CARBON 15K 5% 1/6W
R209	1-249-417-11	CARBON 1K 5% 1/6W
R210	1-215-493-00	CARBON 1M 5% 1/6W
R212	1-249-414-11	CARBON 560 5% 1/6W
R213	1-249-436-11	CARBON 39K 5% 1/6W
R214	1-249-430-11	CARBON 12K 5% 1/6W
R215	1-249-417-11	CARBON 1K 5% 1/6W
R216	1-249-437-11	CARBON 47K 5% 1/6W
R217	1-217-422-00	FUSIBLE 1 5% 1/2W F
R218	1-217-383-00	FUSIBLE 4.7 5% 1/4W F
R222	1-249-437-11	CARBON 47K 5% 1/6W
R223	1-247-895-00	CARBON 470K 5% 1/6W
R225	1-249-434-11	CARBON 27K 5% 1/6W
R226	1-247-887-00	CARBON 220K 5% 1/6W
R227	1-249-429-11	CARBON 10K 5% 1/6W
R228	1-249-429-11	CARBON 10K 5% 1/6W
R229	1-249-421-11	CARBON 2.2K 5% 1/6W
R230	1-249-413-11	CARBON 470 5% 1/6W
R231	1-249-417-11	CARBON 1K 5% 1/6W
R232	1-247-853-11	CARBON 8.2K 5% 1/6W
R233	1-249-431-11	CARBON 15K 5% 1/6W
RB101	1-235-109-00	RESISTOR BLOCK 22K
RB102	1-231-533-00	RESISTOR BLOCK 10Kx4
RB103	1-235-109-00	RESISTOR BLOCK 22K
RB104	1-231-541-00	RESISTOR BLOCK 22Kx4
RB105	1-235-109-00	RESISTOR BLOCK 22K
RV101	1-226-702-00	RES, ADJ, METAL GLAZE 2.2K
RV102	1-230-523-11	RES, ADJ, METAL GLAZE 10K
RV103	1-230-523-11	RES, ADJ, METAL GLAZE 10K
RV104	1-230-519-11	RES, ADJ, METAL GLAZE 470
RY101	1-515-608-11	RELAY
RY102	1-515-608-11	RELAY
RY103	1-515-608-11	RELAY
RY104	1-515-608-11	RELAY
S102	1-554-972-11	SWITCH, SLIDE
S103	1-570-602-11	SWITCH, DIP
X101	1-567-133-00	VIBLATOR, CERAMIC
X102	1-567-482-11	VIBLATOR, CRYSTAL

Ref.No.	Part No.	Description
<u>SW BOARD</u>		
102	*1-622-252-11	PC BOARD, SWITCH
26	*3-161-137-01	SPACER, LED
CNP201	*1-560-591-00	PIN, CONNECTOR 7P
CNP202	*1-564-343-00	PIN, CONNECTOR 9P
D201	8-719-911-19	DIODE 1SS119
D202	8-719-911-19	DIODE 1SS119
D203	8-719-911-19	DIODE 1SS119
D204	8-719-911-19	DIODE 1SS119
D205	8-719-911-19	DIODE 1SS119
D206	8-719-911-19	DIODE 1SS119
D207	8-719-911-19	DIODE 1SS119
D208	8-719-911-19	DIODE 1SS119
D209	8-719-911-19	DIODE 1SS119
D210	8-719-911-19	DIODE 1SS119
D211	8-719-911-19	DIODE 1SS119
D212	8-719-911-19	DIODE 1SS119
D213	8-719-911-19	DIODE 1SS119
D214	8-719-911-19	DIODE 1SS119
D215	8-719-911-19	DIODE 1SS119
D216	8-719-911-19	DIODE 1SS119
D217	8-719-907-36	DIODE TLG114A
S201	1-554-302-00	SWITCH, KEY BOARD
S202	1-570-382-11	SWITCH, KEY BOARD
S203	1-570-382-11	SWITCH, KEY BOARD
S204	1-554-302-00	SWITCH, KEY BOARD
S205	1-554-302-00	SWITCH, KEY BOARD
S206	1-554-302-00	SWITCH, KEY BOARD
S207	1-554-302-00	SWITCH, KEY BOARD
S208	1-554-302-00	SWITCH, KEY BOARD
S209	1-554-302-00	SWITCH, KEY BOARD
S210	1-554-302-00	SWITCH, KEY BOARD
S211	1-516-995-00	SWITCH, LEVER SLIDE
S212	1-516-995-00	SWITCH, LEVER SLIDE

Ref.No.	Part No.	Description
<u>LED BOARD</u>		
103	*1-622-253-11	PC BOARD, LED
CNP301	*1-560-591-00	PIN, CONNECTOR 7P
CNP302	*1-560-471-00	PIN, CONNECTOR 10P
D301	8-719-903-35	DIODE GL-7D201S
D302	8-719-903-35	DIODE GL-7D201S
D303	8-719-903-35	DIODE GL-7D201S
D304	8-719-901-47	DIODE LT-9010D
D305	8-719-901-47	DIODE LT-9010D
D306	8-719-901-47	DIODE LT-9010D